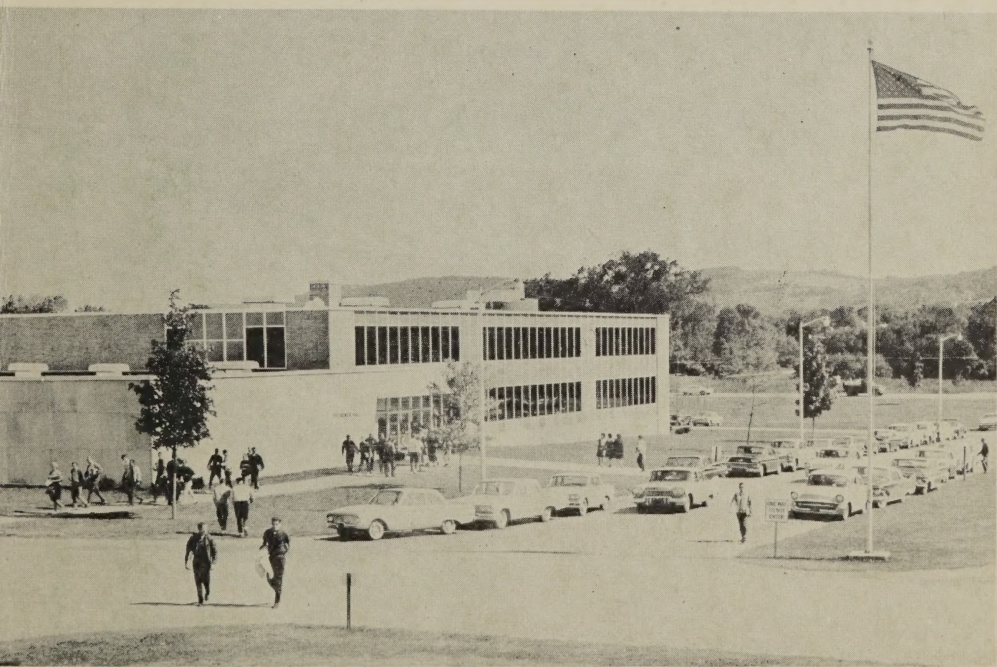


# Broome Technical Community College

Catalog  
1964-1965



# CALENDAR 1964-65

## SUMMER TERM 1964

June 22, 1964		*Co-operative Period Begins
July 6	8:00 a.m.	Classes Begin
Sept. 7		Classes Dismissed—Labor Day
Sept. 16	5:00 p.m.	Classes End
Sept. 17-19		Examinations
Sept. 25		*Co-operative Period Ends

## FALL TERM 1964

Sept. 24	7:30 a.m.	Orientation Begins
Sept. 28		*Co-operative Period Begins
Sept. 28	7:30 a.m.	Classes Begin
Oct. 9	4:30 p.m.	Last Day to Drop Courses Without Penalty or to Add Courses
Nov. 26-27		Thanksgiving Recess
Dec. 11	4:30 p.m.	Classes End
Dec. 14-16		Examinations
Dec. 24		*Co-operative Period Ends

## WINTER TERM 1964-65

Dec. 28, 1964		*Co-operative Period Begins
Jan. 4, 1965	7:30 a.m.	Classes Begin
Jan. 15	4:30 p.m.	Last Day to Drop Courses Without Penalty or to Add Courses
March 17	4:30 p.m.	Classes End
March 18-20		Examinations
March 19		*Co-operative Period Ends
March 22-26		Senior Placement Interviews

## SPRING TERM 1965

March 22		*Co-operative Period Begins
March 29	7:30 a.m.	Classes Begin
April 9	4:30 p.m.	Last Day to Drop Courses Without Penalty or to Add Courses
April 16	12:00 Noon	Classes Dismissed—Good Friday
May 31		Classes Dismissed—Memorial Day
June 9	4:30 p.m.	Classes End
June 10-12 - 9, 10, 11		Examinations
June 15	7:30 p.m.	Graduation
June 25		*Co-operative Period Ends

## SUMMER TERM 1965

June 28		*Co-operative Period Begins
July 8-10		Orientation
July 12	7:30 a.m.	Classes Begin

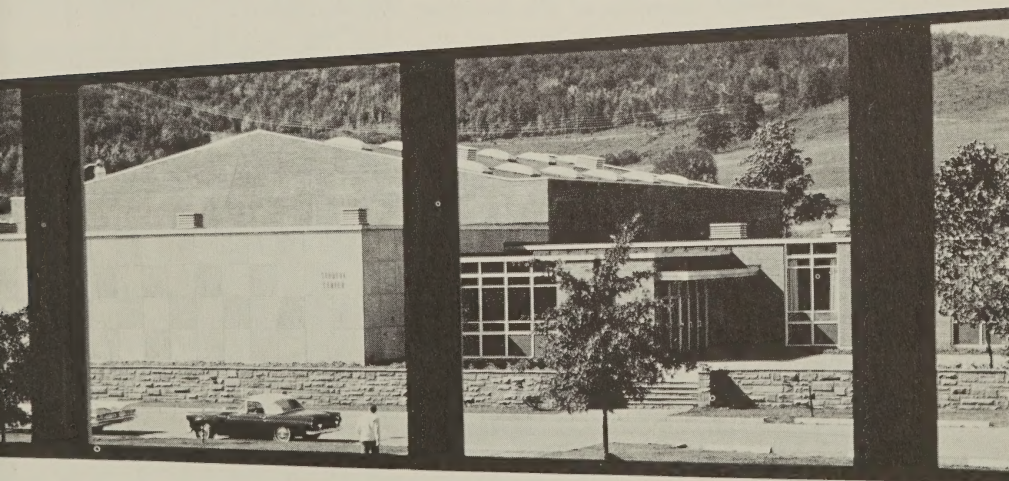
\*Co-operative Work Period for Students Enrolled in Electrical and Mechanical Technology



# **BROOME TECHNICAL COMMUNITY COLLEGE**

**Binghamton, New York**

**CATALOG  
FOR  
COLLEGE YEAR 1964-65**



## **ACCREDITATION**

Broome Tech is a member of the Middle States Association of Colleges and Secondary Schools. The college is supervised by the State University of New York, and its curriculums are registered by the State Education Department.

The Chemical, Civil, Electrical and Mechanical Technology programs are ECPD accredited Engineering Technology curriculums. ECPD is the Engineers Council for Professional Development, a national organization of engineering societies.

The Dental Hygiene program is accredited by the Council on Dental Education of the American Dental Association.



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# A MESSAGE FROM THE PRESIDENT . . . . .

By CECIL C. TYRRELL, *Broome Tech President*

Community colleges like Broome Tech are relatively new on the educational scene and therefore not yet completely understood. They are a post-war development in New York State and hence just beginning to reach educational maturity.

They have different objectives and fulfill different needs than a four-year college or university. It is, therefore, a misconception to consider them abbreviated forms of a college offering watered down versions of an academic course.

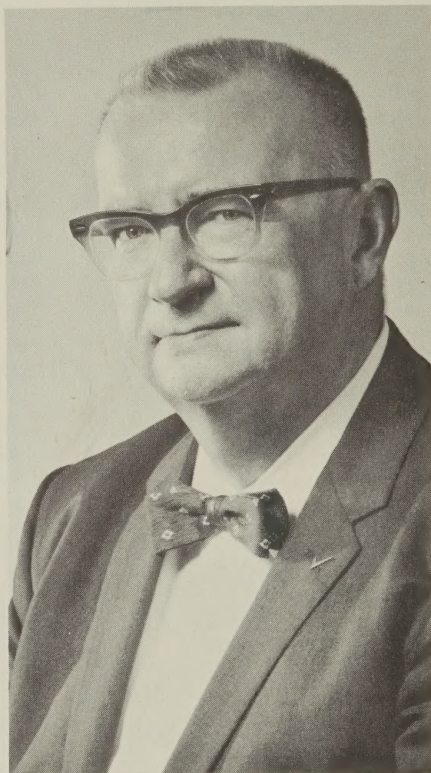
The community college is actually a democratic institution, because it makes higher education available to many who otherwise would not be able to continue beyond high school.

The community college offers accessibility to students, has a broad admissions policy, offers many curricula not available at four-year colleges or universities, and provides low-cost education.

Because community colleges are located throughout New York State, they have changed the idea of students going away to college. A heavy expense has thus been eliminated, as students can live at home while attending. Note that two-thirds of Broome Tech's student body come from Broome County.

The admissions policy is geared to the needs of the community. Hence a much wider range of students is accepted than in many four-year colleges, whose philosophy is that higher education is a defined product which only a restricted class of students has the ability to achieve. Thus the social barriers for college admissions are broken down, and a more heterogeneous student body is the result.

Broome Tech's admissions philosophy is that the top 75 percent of the high school graduates in Broome County are potential students. If they apply them-



CECIL C. TYRRELL  
*Broome Tech President*

selves diligently, there is a curriculum for them.

Counseling or guiding students into the proper program is, therefore, another important function of the community college in general and of Broome Tech in particular.

Community colleges have changed the idea that higher education consists of teaching only the traditional academic subjects. Though they include many general education courses, the curricula stress the fulfillment of the needs of the community and of the individual.

Thus Broome Tech has four offerings

# ..... WHAT IS A COMMUNITY COLLEGE?

in engineering technology to develop engineering technicians. Their place in industry lies between the engineer and the craftsman, and their function is to link these two ends of the industrial work spectrum.

Broome Tech also produces dental hygienists and medical office assistants, has a comprehensive business course with five options, and has three programs designed to transfer graduates to four-year colleges.

The community college is, therefore, truly community-centered, because the bulk of its student body comes from the community, and the emphasis on its curricula is to satisfy the needs of the community and its students.

The low cost of attending community colleges is, of course, an important reason so many can obtain higher education. With the county and state co-

sponsoring the community colleges in New York, most of them have tuition fees like Broome Tech's \$300 per year, to be paid \$100 at the start of each term. Spending the first two years of college at home is a great saving for many students who will go on to a four-year college to continue their education.

Ralph Fields, professor of higher education at Teachers College, Columbia University, summed up the democratic quality of the community colleges well in his book "The Community College Movement," when he wrote:

"The key to this democratic feature is that it brings higher education within the reach of all in the community who wish and who possess the ability to profit by it. In a democratic society, constant effort to democratize the educational program is essential; if the community college contributes to the democratization of higher education, that becomes its greatest achievement."

## OBJECTIVES OF THE COLLEGE

1. To provide the environment and the experiences which promote the students' vocational competency, individual growth and social responsibility through integration of the following:

**KNOWLEDGE.** The acquisition of facts, principles, theories and insights which are fundamental to the understanding of a specialized field of study and of life itself. Cognizance of common sources of information for further intellectual growth.

**PROFICIENCY.** Development of analytical thinking and language abilities for the comprehension, evaluation and communication of knowledge. Development of laboratory techniques relevant to the students' chosen vocational field.

**ATTITUDES.** The stimulation for personal growth—vocational, intellectual, cultural and physical. The appreciation of and commitment to desirable social values.

2. To commit the resources of the College to the business, industrial, educational and cultural enrichment of the community.



## DEGREE PROGRAMS OF THE COLLEGE

Broome Tech is a two-year co-educational comprehensive community college. It seeks to provide educational opportunities for all who can qualify for them and benefit by them through a full-time day program, a part-time extension division which includes the evening classes, and a summer school.

**THE FULL-TIME DAY CURRICULUMS** have two objectives—to prepare graduates for immediate employment or to prepare them to transfer to the third, or junior, year of a four-year college or university. All graduates receive an associate degree. General education courses are combined with technical education in all curriculums.

Applicants to the College should consider carefully the type of program they wish to pursue, for the nature of the offerings makes it all but impossible for a student to switch easily from one curriculum to another after commencing his studies.

**THE EXTENSION DIVISION** offers a wide variety of specialized unit courses and sequential programs leading either to a diploma or associate degree. (See page 7).

**THE SUMMER PROGRAM** is organized mainly to meet the needs of college students and other high school graduates who wish or require additional course work before returning to or entering college. (See page 7).

## TECHNICAL PROGRAMS

In the area of technical education, the college offers five programs. One, Engineering Science, is in effect the first two years of an engineering curriculum, and students who do satisfactory work in it should experience little difficulty in transferring to engineering colleges.

The other four are designed to train engineering technicians in the fields of Mechanical Technology, Chemical Technology, Electrical Technology and Civil Technology. Graduates of these programs are prepared for immediate employment in various types of technical work upon leaving the college.

## HEALTH PROGRAMS—Dental and Medical

Women interested in the field of health services may seek admission to the Dental Hygiene or the Medical Office Assistant programs. Dental Hygiene graduates are qualified to take state licensing examinations which permit them to practice their profession, according to laws of their individual states. They are also eligible to take the National Board examination in the spring prior to graduation or at a later date. A graduate of the two-year program is eligible and qualified to pursue a Bachelor of Science degree in Health Education. Formal arrangements for this program have been made with nearby State University College at Cortland, New York, although transfer is also possible to other colleges.

Those enrolled in the Medical Office Assistant course are trained to assist in physicians' offices, not only in many routine phases of laboratory work, but in secretarial practices as well. Many graduates of this program also find employment in hospital laboratories and with pharmaceutical companies.

## BUSINESS

The Business curriculum is designed primarily to prepare graduates for immediate employment in one of four fields—Engineering Secretarial, Executive Secretarial, Accounting, and Marketing and Sales. In addition, there is a fifth option, Business Administration. It combines more university-parallel preparation with a minimum of job-oriented courses for the person who may wish to work for a while before continuing his education.

## GENERAL EDUCATION

Students in all programs spend at least one fourth of their time studying such general education subjects as English, psychology and economics. The College recognizes that, in addition to technical competence, a graduate should study those subjects which help to understand people and their daily working and personal inter-relationships.

## **LIBERAL ARTS AND SCIENCES**

This curriculum is a university-parallel course, designed especially for the student who wishes to transfer to a four-year college or university after graduation. A sound liberal arts education is basic to many of the professions, such as medicine, law or teaching, and applicants who have such a goal would be well advised to consider this selection. It is also considered excellent preparation for further schooling in business administration.

Many students simply do not know what field to select as a goal. A liberal arts course may serve as a foundation from which a choice of major study can be made at a later date with a minimum loss of time.

## **SPECIAL PROGRAMS**

### **EXTENSION DIVISION**

The Evening Division courses comprise the majority of the Extension Division offerings. These consist of a wide variety of specialized unit courses and sequential programs leading either to a diploma or an associate degree.

The Extension Diploma is recognized by many local industries. It requires four to five years for a student to earn enough credits for it, if he attends classes two evenings per week during both terms of the school year. This is approximately half the number of credits required for an associate degree.

Full details about the evening program are contained in the Extension Division catalog, which is available on request from the Extension Division of the College.

### **SUMMER PROGRAM**

Credit courses, many of which can be accepted for transfer at other colleges, are given in many subjects during the summer. The program is organized mainly to meet the needs of college students and other high school graduates who wish or require additional course work before returning to or entering college. Some non-credit offerings are given, too.

Details about the summer program are contained in a special catalog available in the Extension Division of the College.

### **PRE-TECHNICAL**

Students who either lack the minimum requirements for admission to the engineering technology programs, or those who have been out of school for several years, may request enrollment in the Pre-Technical course. This is a year-long sequence of study emphasizing the fundamental concepts of English, mathematics, and science. Students in this program are not considered to be regular college students and few college credits are granted for completion of these courses. At the end of the year, students are evaluated by the faculty and must be recommended for entrance to a regular program before being admitted in the subsequent year. (See page 44).

### **X-RAY TECHNOLOGY**

A program in X-ray Technology is offered in association with Our Lady of Lourdes Memorial Hospital School of X-ray Technology. The program is two years in length, the first year is spent primarily at the college with one day a week at Lourdes Hospital. The second year, spent at the hospital, includes lectures, demonstrations, conferences and practical application. The program is designed to prepare the student to become an X-ray Technologist and to qualify for The American Registry of Radiologic Technologists Examination. (See page 45).

### **NURSING**

Nurses in training at Binghamton General and Binghamton State Hospitals take part of their first year of study at Broome Tech. Under this program these students may participate in all activities of the college.



# ABOUT BROOME TECH

## THE CAMPUS

The Broome Tech campus is located three miles north of Binghamton on Upper Front Street, which is Route 11 and Route 12 at this point. Six of the seven buildings form a quadrangle to make a compact campus layout. The seventh building, dedicated in May of 1963, is just outside the quadrangle.

The buildings are all two stories high, of modern functional design, and made of brick with colored panel-wall facing. They lie in a suburban setting in the virtual center of the college's 53 acres of land.

In addition to classrooms and laboratories, the campus has its own cafeteria, a fine gymnasium and athletic field and a Little Theater, as well as a rapidly-growing library. These facilities add up to make the campus a \$5,000,000 investment in the youth of Broome and surrounding counties.

## THE COMMUNITY

The Community is an industrial and agricultural area in New York State's Southern Tier. It is in the approximate center of the state, measuring from East to West, and its southern extremity touches the Pennsylvania state line.

Binghamton is the principal city in Broome County, but it is an integral part of the community known as the Triple Cities. Endicott and Johnson City are the other two cities, but Vestal and other outlying suburbs help to make the community much larger in population and geography than the city limits of Binghamton.

Binghamton has a population of 75,941, yet the Triple Cities area embraces 148,524 people. The population of Broome County is 212,661. Diversified industry has made the community an economically sound one.

The College has become an integral part of the community since it was started in 1947. Many of the campus facilities are offered without charge for use by responsible organizations, and most of the College's curriculums are designed to help fill the economic needs of the county.





## HISTORY

Broome Tech graduated its first class in 1949. These students had entered what was then known as the New York State Institute of Applied Arts and Sciences at Binghamton in the fall of 1947. The original institute was one of five founded in the state in 1946, following the pattern of six agricultural and technical institutes which New York had established earlier in the century. The first programs offered were all terminal in nature and included Chemical, Electrical and Mechanical Technologies, as well as Medical Office and Technical Office Assistants courses.

In 1953 New York relinquished operating control of the school to a new sponsor, the County of Broome, under provisions of the newly-enacted State Community College Law, and the name was changed to Broome County Technical Institute. In 1957 the name was again changed to Broome Technical Community College to reflect the increasingly comprehensive nature of its educational offerings.

In keeping with the comprehensive objectives of this community college, a university-parallel curriculum was instituted in the Engineering Sciences in 1959, a two-year program of Liberal Arts and Sciences was started in the fall of 1962, and a transfer program in Business Administration was added in 1963.

For its first five years, the school was housed in a refurbished State Guard armory in downtown Binghamton. This building was gutted by fire in September of 1951, and for the next five years Kalurah Temple and two other buildings in the city provided temporary quarters. In 1957 the college moved to its present campus on the north side of Binghamton on Route 11. The first addition to the original campus came with the construction of Titchener Hall which was dedicated on May 17, 1963.



# ADMISSION

## Entrance Requirements

A high school diploma or the equivalent is required for entrance to all curriculums. All applicants must take the Scholastic Aptitude Test of the College Entrance Examination Board. Applicants must appear at the College for a personal interview.

In addition, an applicant must meet the minimum requirements of physical ability required by the occupational field in which he wishes to engage. He must also be recommended by his high school principal or guidance counselor.

In planning for college, it is advisable that the high school student enroll in a college preparatory curriculum. The following table should help in planning a high school program.

Curriculum	Recommended High School Subjects	Other Desirable High School Subjects
Business	2 units Mathematics 2 units Science	Shorthand and typing will qualify the student for advanced courses
Chemical	Chemistry 3 units Mathematics including Trigonometry	Physics, Additional Mathematics, Technical courses
Civil	Physics 3 units Mathematics including Trigonometry	Additional Mathematics, Technical courses
Dental Hygiene	2 units Mathematics Biology, Chemistry	Social Studies
Electrical	Physics 3 units Mathematics including Trigonometry	Additional Mathematics, Technical courses
Engineering Science	Chemistry, Physics 3½ units Mathematics including Advanced Algebra	Additional Mathematics, Science and Technical courses
Liberal Arts and Sciences	2½ units Mathematics 4 units in any combination of science, language, or additional mathematics	College preparatory courses
Mechanical	Physics 3 units Mathematics including Trigonometry	Additional Mathematics, Technical courses
Medical Office Assistant	2 units Mathematics 2 units Science	Typing, Shorthand
X-ray Technology	2 units Mathematics 2 units Science	Additional Mathematics and Science

## Late Registration

An applicant may not register later than two weeks after the beginning of the fall term except by permission of the Dean of the College.

## **Pre-Technical Program**

Applicants who do not satisfactorily meet the entrance requirements may apply to enter the Pre-Technical program. This preparatory year program, under the direction of the Extension Division, provides opportunity for the student to strengthen his academic background so that he may enter the full-time program with a better expectation of successful accomplishment.

## **Application Procedure**

New students are admitted only at the beginning of the school year. However, applications will be accepted at any time.

An application for admission must be made on official forms supplied on request by the Admissions Office.

A deposit of \$10 must accompany each application. The deposit is non-refundable but is applied as an advance payment on the student activity fee if the application is accepted. Once a student is accepted, he will be billed for an advance payment of \$50 on tuition. This is also non-refundable.

Each applicant will be interviewed by members of the Committee on Admissions. An appointment will be made after the applicant's deposit, application and other required credentials have been received. Appointments for interviews will normally be made after January 1 of each year.

## **Readmission**

Applications for readmission to the college must be submitted to the Admissions Office prior to three weeks before the start of the term in which the applicant is requesting readmission. Applications received later than the above period may be returned to the applicant by the Director of Admissions without processing.

## **Part-Time Students**

All enrollments on a part-time basis during the day school hours will be on a strict space-available basis.

Individuals may register for part-time enrollment during day school hours for a maximum of 6 term credit hours, by applying directly to the Registrar of the College.

In exceptional circumstances, applicants will be permitted to enroll for a maximum of 12 term credit hours, subject to the approval of the Admissions Committee of the College. This committee will require high school or other academic credentials prior to the beginning of classes in any term.

All individuals admitted on other than a full-time basis will be considered extension students, subject to policies governing students in the Extension Division, in addition to regulations governing full-time students. Such enrollment does not automatically make the enrollee a candidate for an Associate Degree.

## **Advanced Standing Students**

Transfer of credit from students who have been enrolled in other accredited colleges is subject to the approval of the chairman of the student's major department and the registrar. Students who have attended one or more other colleges must in all cases submit an official transcript of work taken to the College Admissions Office before formal acceptance will be granted.

## **Credit by Examination**

Advanced Placement Examinations and College Proficiency Exams:

Applicants who have completed any of the Advanced Placement Examinations sponsored by the College Entrance Examination Board or the College Proficiency Examinations sponsored by the University of the State of New York may apply for credit and advanced placement. Such requests will be handled similar to transfer credit and will be granted where applicable, subject to the approval of the department chairman and registrar.



# **ACADEMIC STANDARDS AND REGULATIONS**

## **Requirements for Graduation**

### **THE ASSOCIATE IN APPLIED SCIENCE DEGREE**

1. Degree requirements: a minimum of 96 quarter credits
2. Curriculum requirements:
  - a) A minimum of 60 credits in a student's major field. These are courses intrinsic to and required by the various curriculums.
  - b) A minimum of 30 credits in general education or liberal arts courses.
    - 1) Social Sciences: a minimum of 9 credits
    - 2) Biological and Physical Sciences (including Mathematics): a minimum of 9 credits
    - 3) Humanities: a minimum of 9 credits in English (composition and/or speech)
    - 4) Electives (or additional courses) in the foregoing fields comprising a minimum of 30 credits in the liberal arts and sciences or general educational areas
  - c) Satisfactory completion of all courses in a curriculum or as approved in a department
3. Quarter point averages must total 8.60 for a six-quarter program or the equivalent thereof
4. Satisfaction of all obligations to the College

### **THE ASSOCIATE IN ARTS DEGREE**

1. Degree requirements: a minimum of 90 quarter credits  
(in addition to physical education)
2. Curriculum requirements: a minimum of 72 credits distributed as follows:
  - a) Social Sciences: a minimum of 18 credits
  - b) Biological Sciences and Physical Sciences: a minimum of 12 credits
  - c) Mathematics: a minimum of 9 credits  
(this requirement may be satisfied if candidate has completed 3½ units of secondary mathematics through Advanced Algebra)
  - d) Humanities: a minimum of 27 credits, of which 18 shall be in English (composition, speech, and literature) and 9 of which shall be in other subjects in the humanities
  - e) Electives: 80% shall be in the fields of study listed above
  - f) Physical Education: a minimum of 6 credits. Exception to this requirement may be made by the Dean of the College
  - g) Satisfactory completion of all courses in a curriculum or as approved in a department
3. Quarter point averages must total 8.60 for a six-quarter program or the equivalent thereof
4. Satisfaction of all obligations to the College

# GRADING

Honor Points Per Credit Hour	Grade	Explanation
4	A	Outstanding achievement in meeting the objectives of the course
3	B	Above average achievement
2	C	Average achievement
1	D	Below average achievement
0	P	Poor achievement—no honor points
0	F	Failure to meet the objectives of the course
0	W	Withdrawal from course within first two weeks of term.
0	I	Incomplete. Work to be made up within one week or by special arrangement with the department.
0	S	Satisfactory. (Final grade for a non-credit course or a mid-term grade in a credit course to denote a student's progress).

## Scholastic Standing

To remain in satisfactory standing, a student must earn a point average of 1.2 the first term, 1.4 the second term, 1.5 the third term, and 1.5 for each succeeding term until graduation.

Any student who does not maintain this minimum point average in any term is placed on probation for the following "on campus" term.

In order for a student to remain in good standing, he must also demonstrate mature attitude, interest and cooperation.

Grades are issued at the end of each term. Students will also be notified of their academic standing at the approximate mid-point of each term. Satisfactory progress will be denoted by an "S" letter grade. Progress below average (below C) will be denoted by an appropriate letter grade.

## Residence Requirements

Students transferring from other colleges will, as a general rule, be expected to complete a minimum of one year's work at Broome Tech, immediately prior to being granted the Associate Degree.

## Honors

At the end of each term, students who have earned an average of 3.0 or above are placed on the Honor Roll. Those who have earned 3.5 or better are named to the President's High Honor List.

## Attendance Regulations

Every student is expected to attend all sessions of classes and laboratory work for which he is registered, and all absences and tardinesses will be recorded.

Excuses for absences will be granted in accordance with instructions outlined in the Student Handbook. Unexcused absences from classes are considered valid reason for dismissal or other disciplinary action.

## Withdrawal from the College

A student compelled to withdraw at any time must immediately notify the Student Personnel Office and complete the proper termination form. Failure to comply with this regulation will cause the individual to forfeit his right to honorable dismissal and to lose any refund of fees.

## **Withdrawal from Course**

A student permitted to withdraw from a course during the first two weeks of the term will have no indication of such registration on his permanent official college record.

If a student is permitted to withdraw from a course beyond this date, he will receive an F grade.

If, for reasons of health or circumstances beyond his control, the student is counseled by his department chairman and the Dean of the College to drop a course, he will receive a W.

## **Dismissal**

Students may be considered for dismissal for the following causes: More than one consecutive probationary period, more than one failing grade in a term, failure to earn a point average of 1.0 in any term, irregular attendance, neglect of work or financial obligations, failure to comply with College rules and regulations or official notices, conduct unbecoming a student.

Any action leading to the requested withdrawal of a student is taken up by the Executive Committee. Any student may petition his department staff to waive the academic requirements of the College leading to dismissal; such petitions are acted upon by the Executive Committee upon their presentation by the department concerned. The College reserves the right to be the sole judge in all matters pertaining to dismissal.

Students who are dismissed from the College will not be permitted to re-enroll in the day school term subsequent to the dismissal action.

## **Transfer to Senior Institutions**

Students desiring to transfer are encouraged to consult with their faculty advisor, department chairman or a representative from the Student Personnel Office for assistance in selecting colleges that are appropriate in terms of their goals and demonstrated college achievement.

Broome Technical Community College will not as a general rule encourage students who have less than a C (2.0) average to transfer to other colleges.

An applicant for transfer who will not complete the requirements for the Associate Degree at Broome Technical Community College prior to the time of anticipated transfer may not be recommended for transfer, if the faculty of the college feel the applicant has not completed a desirable breadth or depth of study to provide suitable criteria for measuring academic ability.

The following procedures are to be followed by students desiring transfer:

1. Initiate an application to transfer by applying directly to the college. Applications should be submitted during December, January or February of the second year. Applications submitted after these dates involve the risk of being deferred or returned due to lack of space at the four-year college.
2. Fill out Section I (in duplicate) of the Transfer Record Form in the Student Personnel Office. Students in Liberal Arts and Sciences, Engineering Science, and the Business Administration curricula will be requested to complete the Transfer Record Form regardless of their intention to transfer immediately upon graduation from Broome Tech.
3. Complete a Request For Transcript of Academic Record Form in the Student Personnel Office for each college to which they are applying.
4. Forward request for references or recommendation forms from other colleges to the Student Personnel Office.

Please review these procedures carefully. Omission of any step would result in a delay of your records being forwarded to another college. If you have any questions regarding the above procedure, consult with the Student Personnel Office.



# GENERAL INFORMATION

## EXPENSES

### Tuition

For New York State residents ..... \$300 per year  
(Payable at the rate of \$100 per term)

For out-of-state residents ..... \$600 per year  
(Payable at the rate of \$200 per term)

Tuition for all students is payable at the beginning of each of the first three quarters of the school year, regardless of cooperative work assignment.

### Fees

Tuition and fees are payable at the Finance Office not later than the last day of the first week of each term. Any refund is at the option of the College. The following fees will be charged, with the College reserving the right to change any of them:

STUDENT ACTIVITY ..... \$38 per year

The \$10 deposit required with the application becomes advance payment on the activity fee, if the applicant is accepted. The activity fee entitles students to admission to varsity games, dances and parties, as well as a subscription to the student newspaper (Tech Talk) and the yearbook (The Citadel).

Students enrolled for less than 12, but more than 6, credit hours in a given term will be assessed at the rate of \$1 per credit hour for their student activity fee. These students will not be entitled to a free copy of the college yearbook, The Citadel. In no case should any student be charged more than the full-time student activity fee of \$38 in any academic year.

HEALTH ..... \$23 per year

This fee covers the cost of the student health insurance program. If a student is covered under his family's health insurance, however, a statement to this effect will be accepted instead of the health fee, if the statement is signed by a parent or by the student, if he or she is of age. This statement should cite the name of the insurance program under which the student is covered, and it should be turned in to the Finance Office.

GRADUATION ..... \$20

This fee is paid at the start of the term preceding graduation. One half is for life membership in the Alumni Association.

LATE REGISTRATION ..... \$5

#### LABORATORY

Refundable ..... \$10 each per year to cover breakage in Chemistry and Physics. If breakage is less than \$10 worth, then appropriate amount is refunded.

Non-refundable ..... \$5 per term for each Chemistry laboratory course for use of materials.

### Books and Supplies

Each student provides at his own expense the necessary books and instructional materials. These may be purchased at the Book Store maintained by the Faculty-Student Association for the convenience of the students. The cost varies, depending on the curriculum, from about \$45 to \$125 per year.

Uniforms and dental instruments for Dental Hygiene students will cost approximately \$100.

## **Living Accommodations**

The College does not maintain dormitories. Local students, of course, live at home. Other students are required to live in rooms which have been inspected and approved by the College, or at the YMCA or YWCA. Lists of approved rooms are maintained by the Student Personnel Office, and students are assisted in finding suitable living quarters.

## **Board and Room**

The cost of board and room for out-of-town students is dependent upon the demands of the student. The average cost varies from \$18 to \$25 per week.

## **Length of Curriculum**

All associate degree programs are two years in length. The college year is divided into four terms of approximately eleven weeks each. Students enrolled in the cooperative work curriculums — Electrical Technology and Mechanical Technology — spend a total of six terms on campus and one term in industry. Students in the other curriculums spend three terms on campus each year.

## **Cooperative Work Program**

In the work-study plan, students are placed in jobs related to their major field of study for one employment period. Students are paid the prevailing wages for the job they do. Cooperative students in the technology curriculums earn about \$800 to \$1000 for the cooperative period.

The program offers other distinct advantages:

1. It is exploratory. The student has a chance to survey and evaluate a number of different jobs within his field. At the same he can take stock of his own abilities and interests.
2. It is an opportunity to correlate classroom studies with actual work experience.
3. It is a means of demonstrating the importance of human relations in the work situation.

Cooperative work students are expected to "earn their own way," to perform the duties required without special favor. At the end of the period, employers submit a report covering the students' performances.

## **Veterans**

All full-time curriculums are approved by the Veterans Administration. Those applicants wishing to obtain government educational benefits should consult their nearest veterans agency.

## **AUDIO-VISUAL AIDS**

Students and faculty have many audio, visual and audio-visual aids at their disposal through the Audio-Visual Department. These can be used for classroom or co-curricular purposes, and they include films and film strips, a preview room, an art workshop, tape recorders, transparent and opaque overhead projectors, as well as slide projectors.

The department makes signs and posters, handles the ordering, distributing and locating of films for faculty members, and provides the materials and assistance in the art workshop.

The College's photo department and duplicating center are also part of the Audio-Visual Department.

## FINANCIAL AID

Many young people are denied the advantages of higher education because of the costs. Broome Technical Community College has made a sincere effort to overcome these economic barriers through its Student Aid Association, which in cooperation with industries and organizations in Broome County, has established a Scholarship Fund.

Students in the Electrical and Mechanical programs, moreover, have one term of cooperative work as part of their courses. This may enable them to earn enough money to pay for their entire tuition costs at the College.

### Scholar Incentive Awards

Under the provisions of the Scholar Incentive Program, most students attending Broome Technical Community College who are residents of New York State are eligible for a Scholar Incentive Award. The award is a direct grant payable to the student each term. For details, students should contact the Student Personnel Office.

Payments to Broome Tech students will amount to approximately \$100 per student each academic year. A student who does not complete a full academic year may be requested by the State of New York to return part of the grant proportionate to the amount of the term not completed.

It is the responsibility of the individual student to complete and file an application for the Award. Applications for the Scholar Incentive Award may be obtained from, and when completed should be sent directly to, the Division of Educational Testing, State Education Department, Albany 1, New York.

Applications should be filed before July 1, but will be accepted up to December 1. Applications for the spring semester have an April 1 deadline. Students must apply each year.

### New York State Regents Scholarships

Recipients of New York State Regents Scholarships may use them at the College, although the Regents Scholarship for Engineering and Scientific Studies is applicable only to the Engineering Science program.

### Students Loans

Students enrolled at the college are eligible to borrow from either the New York Higher Education Assistance Corporation or from funds made available under the auspices of the National Defense Loan Program. Students may borrow to a maximum of \$1,000 at nominal interest rates and with repayment periods up to 10 years.

More information may be obtained from the Student Personnel Office.

### Scholarships

Nearly fifty scholarships and grants-in-aid of about \$200 each have been established to recognize outstanding scholarship and/or financial need of applicants to Broome Technical Community College. These awards are made primarily to entering freshmen students to help defray most or all of the first year's expenses. Students may apply for these grants at the time of making application for entrance to the college.

Contributors to the scholarship fund:

American Society for Quality Control  
Anso Division of General Aniline  
& Film Corp.  
The Azon Corp.  
Binghamton Container Co., Inc.

The Binghamton Savings Bank  
Binghamton Cold Storage  
Broome Tech Alumni Association  
Broome Tech Business Club  
Cadre Industries Corp.



Chernin & Gold, attorneys  
 Clark-Cleveland, Inc.  
 Conrad & Virginia Klee Foundation, Inc.  
 Crowley's Milk Co.  
 David E. Meade Scholarship Awarded  
 by Kiwanis Club of Binghamton  
 Endicott Forging & Manufacturing Co.  
 Fairbanks Co.  
 First-City National Bank  
 International Business Machines Corp.  
 LaMonica's Restaurant  
 Link Aviation Corp.  
 Marine Midland Trust Co.

National Office Management Association,  
 Triple Cities Chapter  
 New York State Electric & Gas Corp.  
 Olum's of Binghamton  
 Ozalid Division,  
 General Aniline & Film Corp.  
 Mr. and Mrs. Charles Pierson  
 Savory Oil Co., Inc.  
 Scintilla Division, Bendix Aviation Corp.  
 Stow Manufacturing Co.  
 Technical and Engineering Council  
 of the Southern New York Area  
 E. H. Titchener & Co.

## Endowment Fund Scholarships

Individuals and industrial and professional organizations have donated and/or willed money to the Broome Technical Community College Scholarship Endowment Fund. This money is invested to produce interest or dividends that are used to establish scholarships. Five scholarships of \$200 each from this source are:

**Neva M. Ash Memorial Scholarship.** Miss Ash served with distinction in many capacities on the faculty from the first days of the College in 1947 until her death in 1963.

**Mrs. Charles F. (Jeanette) Johnson Memorial Scholarship.** Mrs. Johnson and her husband were both devoted supporters of education and of local institutions. Her support of Broome Tech began in the early days of the college's Student Aid Association and continued until her death.

**Dr. James T. Ivory Memorial Scholarship.** Dr. Ivory was one of the original members of the Board of Trustees and the only one still serving at the time of his death in April 1964. He had been a tireless worker on behalf of the college, and the Dental Hygiene Clinic was renamed in his honor shortly after his death.

**S. David Molyneaux Memorial Scholarship.** Dr. Molyneaux was a highly respected member of the faculty from 1959 until his death in 1963. Moreover, he served the community's cultural and scientific needs with an unusual dedication that won him many friends and much respect.

**Paul F. Titchener Memorial Scholarships (2).** Mr. Titchener was chairman of the College's Board of Trustees from the day it first met in 1947 until he resigned in 1957. He was instrumental in having the state establish a two-year college in Binghamton in 1947, and he continued to serve as a trustee until his death in 1963.

## Special Scholarships

Following are contributors to specially designated scholarships:

**Binghamton Chapter, National Secretaries Association Scholarship.** Established in 1954. One scholarship of \$200 to be awarded to a graduate of one of the Triple Cities high schools entering the Business curriculum. Recipient to be judged on the basis of scholastic ability, character, personality and financial need.

**Broome County Dental Society Scholarship.** One scholarship of \$100 and a plaque awarded at capping service to a Dental Hygiene student who showed outstanding ability and campus leadership during her freshman year.

**Broome County Medical Society Scholarship.** An annual award of \$200 to that student completing the first year in the Medical Office Assistant program who has been selected by the faculty on the basis of aptitude, initiative and scholarship.

- Civic Club of Binghamton Award.** Established in 1953. Awards of \$125 are given to three young women, graduating from one of the Binghamton high schools and wishing to enter the college.
- Endicott Rotary Club Scholarship.** An annual award of \$300 granted to a graduate of Seton Catholic High School or Union-Endicott High School in the city of Endicott.
- Fairbanks Company Scholarship.** Two awards (\$400 each) made annually to a young man and young woman whose parent is in the employ of the Fairbanks Company of Binghamton, New York. The Scholarship Committee of the College will select the recipients. Eligible applicants must file an "Application for Scholarship" form before May 20 and prior to admission to College. Withdrawal from the College will terminate the award.
- Industry Advancement Program of the Associated Building Contractors of the Triple Cities, Inc.** An annual award of \$200 given to a freshman entering the Civil Technology program; first preference to a son of a member of either Carpenter Union Local No. 281 or Local No. 1575, next preference to a son of a member of one of the building trade unions affiliated with the Binghamton Building and Construction Trade Council AFL-CIO.
- Irving Schwab Memorial Scholarship.** A \$300 award to an applicant who can meet all entrance requirements, and who in addition has financial need and has shown outstanding ability as a basketball player.
- Johnson City Lions Club Scholarship.** An annual award of \$200 awarded to a graduate of Johnson City High School.
- Lou Rappaport Freshman Scholarship.** One scholarship of \$200 to be given to a worthy student graduating from Chenango Valley Central School.
- Sales & Marketing Executives of the Southern Tier Award.** This is an award of \$200 to be given to a freshman at the end of his first year at Broome Tech who elects the Business-Marketing Option in his senior year. The recipient is to be chosen on the basis of need, character and scholastic ability. If the committee feels that two students meet these criteria, the award may be divided.
- Soroptimist Club Scholarship.** An annual scholarship of \$200 is given to a student entering the Dental Hygiene program. The selection of the candidate is based upon financial need, quality of scholarship in high school, and aptitude as a dental hygienist.
- Town and Country Lanes Scholarship.** A \$200 award to an applicant who can meet all entrance requirements, and who in addition has financial need and has shown outstanding ability as a basketball player.
- Triple Cities Business and Professional Women's Club Award.** Established in 1954. An award of \$600 is given to one or two young women. The recipient is selected from the graduates of one of the following schools:
- Binghamton Central High School
  - Binghamton North High School
  - Chenango Valley Central School
  - Johnson City High School
  - Susquehanna Valley Central School
- Women's Auxiliary of the Broome County Dental Society.** A fund established for a deserving student in the Dental Hygiene curriculum who might need assistance to complete studies at the College.

## Employment and Placement

Part time work is often available throughout the academic year. Students desiring such work should consult the Student Personnel Office.

In cooperation with the department chairmen, the Student Personnel Office coordinates permanent placement, including employment listings and appointments for interviews.





# **CURRICULUMS** **of the** **COLLEGE**



# **BUSINESS**

The Business Department offers courses of study in five different fields. These are in engineering secretarial work, executive secretarial work, accounting, business administration and marketing.

These programs were planned with the assistance of engineers, their secretaries, businessmen, comptrollers, auditors, sales managers, office managers and accountants.

Management training programs offered by banks, chain stores and insurance companies provide some of the best opportunities for a graduate of the Accounting, Business Administration and Marketing Management options.

## **Engineering Secretary**

Graduates of this option can obtain immediate employment as stenographer-secretaries, technical secretaries or as private secretaries. They are in demand when industry or government needs secretarial help that can understand the specialized language of engineering. Since these students study science and engineering terminology in addition to their business skills, they are well prepared to work on engineering reports, records and correspondence.

## **Executive Secretary**

These graduates are expected to find opportunities as secretarial assistants in the professions, as well as in government and with business firms. Students in this option may elect courses from other fields of study in the College consistent with their interests and vocational goals.

## **Accounting**

Students taking this option receive their training in such basic areas as cost accounting, internal auditing, machine accounting and tax accounting. Graduates have successfully taken positions in banks, the Internal Revenue Service, industrial firms and public accounting.

## **Business Administration**

This option consists of a curriculum designed to enable graduates to continue their business studies at four-year colleges and universities. The program offers maximum transfer potential toward a bachelor's degree in accounting or business administration, while giving students some marketable skills.

## **Marketing**

Students taking this option should have an interest and personality suited to a career as a salesman. Employment opportunities are generally found in sales of services, equipment, insurance, and products at the wholesale level. This program is not designed to prepare one for retail selling.



# Business Administration • Accounting • Marketing

These 3 options have the same first year of study.

1st YEAR			Hours Per Week		
Term 1			Class	Lab	Credits
GE 101	English .....		3	0	3
GE 110	Psychology .....		3	0	3
MA 101	**Mathematics or GE 150 Political Science		3	0	3
BU 161	*Typewriting or GE 140 Philosophy .....		0-3	5-0	2-3
BU 101	Accounting .....		2	2	3
BU 145	Business Law .....		3	0	3
			14-17	7-2	17-18
Term 2					
GE 102	English .....		3	0	3
PH 100	Science .....		2	2	3
BU 162	*Typewriting or General Education Elective		0-3	5-0	2-3
BU 141	Business Mathematics .....		3	0	3
BU 102	Accounting .....		2	2	3
BU 146	Business Law .....		3	0	3
			13-16	9-4	17-18
Term 3					
GE 103	English .....		3	0	3
GE 130	Sociology .....		3	0	3
BU 151	Business English .....		3	0	3
BU 142	Business Statistics .....		3	0	3
BU 103	Accounting .....		2	2	3
BU 121	Finance .....		3	0	3
			17	2	18

\*If a student has satisfactorily completed a Regents unit of Typewriting of 75% or equivalent, a General Education course must be substituted.

\*\*Students who satisfactorily completed Intermediate Algebra & Trigonometry or Mathematics II in secondary school will take Political Science instead of Mathematics.

## Business Administration Option

2nd YEAR					
Term 4					
LA 145	Development of Western Civilization ..		3	0	3
LA 155	Economics .....		3	0	3
BU 204	Intermediate Accounting .....		2	2	3
BU 207	Cost Accounting .....		2	2	3
MA 110	College Algebra .....		3	0	3
			13	4	15
Term 5					
LA 146	Development of Western Civilization ..		3	0	3
LA 156	Economics .....		3	0	3
BU 205	Intermediate Accounting .....		2	2	3
BU 208	Cost Accounting .....		2	2	3
MA 111	College Algebra .....		3	0	3
			13	4	15
Term 6					
LA 147	Development of Western Civilization ....		3	0	3
LA 157	Economics .....		3	0	3
BU 206	Intermediate Accounting .....		2	2	3
GE 104	Effective Speaking .....		3	0	3
MA 104	Mathematics of Finance .....		3	0	3
			14	2	15

# Accounting Option

## 2nd YEAR

Hours Per Week

Term 4		Class	Lab	Credits
BU 207	Cost Accounting .....	2	2	3
BU 230	Data Processing .....	2	2	3
BU 220	Payroll Accounting .....	2	2	3
LA 155	Economics .....	3	0	3
BU 272	Office Machines .....	2	4	4
BU 253	Personnel Administration .....	3	0	3
		14	10	19

### Term 5

BU 208	Cost Accounting .....	2	2	3
BU 231	Data Processing .....	2	2	3
LA 156	Economics .....	3	0	3
BU 249	Office Management .....	3	0	3
BU 222	Federal Tax .....	2	2	3
BU 273	Office Machines .....	2	4	4
		14	10	19

### Term 6

GE 104	Effective Speaking .....	3	0	3
BU 232	Data Processing .....	2	2	3
BU 223	Internal Auditing .....	2	2	3
BU 250	Office Management .....	3	0	3
LA 157	Economics .....	3	0	3
BU 254	Industrial Organization & Management .....	3	0	3
		16	4	18

# Marketing Option

## 2nd YEAR

### Term 4

BU 209	Distribution Cost .....	2	2	3
BU 290	Salesmanship .....	3	0	3
LA 155	Economics .....	3	0	3
BU 296	Credit .....	3	0	3
BU 292	Marketing .....	3	0	3
BU 253	Personnel Administration .....	3	0	3
		17	2	18

### Term 5

GE 104	Effective Speaking .....	3	0	3
BU 291	Sales Management .....	3	0	3
LA 156	Economics .....	3	0	3
BU 249	Office Management .....	3	0	3
BU 293	Advertising .....	3	0	3
BU 230	Machine Accounting .....	2	2	3
		17	2	18

### Term 6

BU 250	Office Management .....	3	0	3
BU 272	Office Machines .....	2	4	4
BU 295	Market Research .....	3	0	3
LA 157	Economics .....	3	0	3
BU 254	Industrial Organization & Management .....	3	0	3
BU 294	Advertising .....	3	0	3
		17	4	19



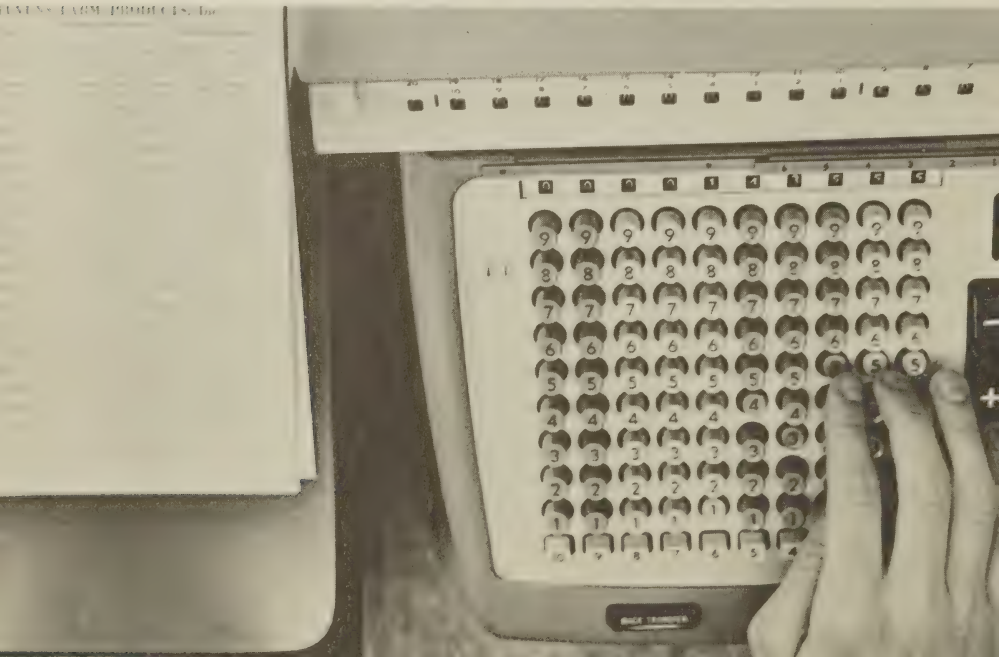
Engineering Secretary

Executive Secretary

These 2 options have the same first year of study.

		1st YEAR		Hours Per Week		
Term 1		Class	Lab	Credits		
GE 101	English .....	3	0	3		
GE 110	Psychology .....	3	0	3		
MA 101	**Mathematics or Political Science .....	3	0	3		
BU 161	*Typewriting or GE 140 Philosophy ....	0-3	5-0	2-3		
BU 164	***Shorthand or General Education Elective	2-3	3-0	3		
BU 101	Accounting .....	2	2	3		
		13-17	10-2	17-18		
Term 2						
GE 102	English .....	3	0	3		
PH 106	Physics .....	2	2	3		
BU 162	Typewriting .....	0	5	2		
BU 165	Shorthand .....	2	3	3		
BU 141	Business Mathematics .....	3	0	3		
BU 102	Accounting .....	2	2	3		
		12	12	17		
Term 3						
GE 103	English .....	3	0	3		
GE 104	Effective Speaking or PH 107 Physics ....	3-2	0-2	3		
BU 163	Typewriting .....	2	2	3		
BU 166	Shorthand .....	2	3	3		
BU 167	Transcription .....	2	3	3		
BU 103	Accounting .....	2	2	3		
		14-13	10-12	18		

\*If a student has satisfactorily completed a Regents unit of Typewriting of 75% or equivalent, GE 140 Philosophy must be substituted.  
\*\*Students who have satisfactorily completed Intermediate Algebra & Trigonometry or Mathematics II in secondary school will take Political Science instead of Mathematics.  
\*\*\*If student has passed a Regents unit of Shorthand of 65% or equivalent, a 3-hour course in General Education will be substituted for Shorthand in first term.



## Engineering Secretary Option

Term 4		2nd YEAR		
CH 180	Chemistry .....	3	2	4
BU 260	Technical Shorthand .....	2	3	3
GE 130	Sociology .....	3	0	3
BU 220	Payroll Accounting .....	2	2	3
MT 101	Engineering Drawing .....	0	3	1
BU 253	Personnel Administration .....	3	0	3
		13	10	17
Term 5				
GE 104	Effective Speaking .....	3	0	3
BU 230	Machine Accounting .....	2	2	3
BU 261	Technical Shorthand .....	2	3	3
BU 145	Business Law .....	3	0	3
MT 129	Shop .....	1	3	2
BU 274	Office Practice .....	2	4	4
		13	12	18
Term 6				
GE 120	Economics .....	3	0	3
BU 151	Business English .....	3	0	3
BU 262	Shorthand .....	2	3	3
BU 275	Office Practice .....	2	4	4
BU 146	Business Law .....	3	0	3
BU 254	Industrial Organization & Management ..	3	0	3
		16	7	19

## Executive Secretary Option

Term 4		2nd YEAR		
LA 236	World Literature .....	3	0	3
LA 155	Economics .....	3	0	3
BU 270	Shorthand Dictation .....	2	3	3
BU 151	Business English .....	3	0	3
BU 253	Personnel Administration .....	3	0	3
LA 193	xPhilosophy .....	3	0	3
		17	3	18
Term 5				
LA 237	English Literature of the 17th Century ..	3	0	3
LA 156	Economics .....	3	0	3
BU 271	Shorthand Dictation .....	2	3	3
BU 145	Business Law .....	3	0	3
BU 274	Office Practice .....	2	4	4
LA 194	xPhilosophy .....	3	0	3
		16	7	19
Term 6				
LA 238	Modern American Drama .....	3	0	3
LA 157	Economics .....	3	0	3
BU 262	Shorthand .....	2	3	3
BU 146	Business Law .....	3	0	3
BU 275	Office Practice .....	2	4	4
LA 195	xPhilosophy .....	3	0	3
		16	7	19

x If schedule can be arranged, a year of language may be substituted for the year of Philosophy.

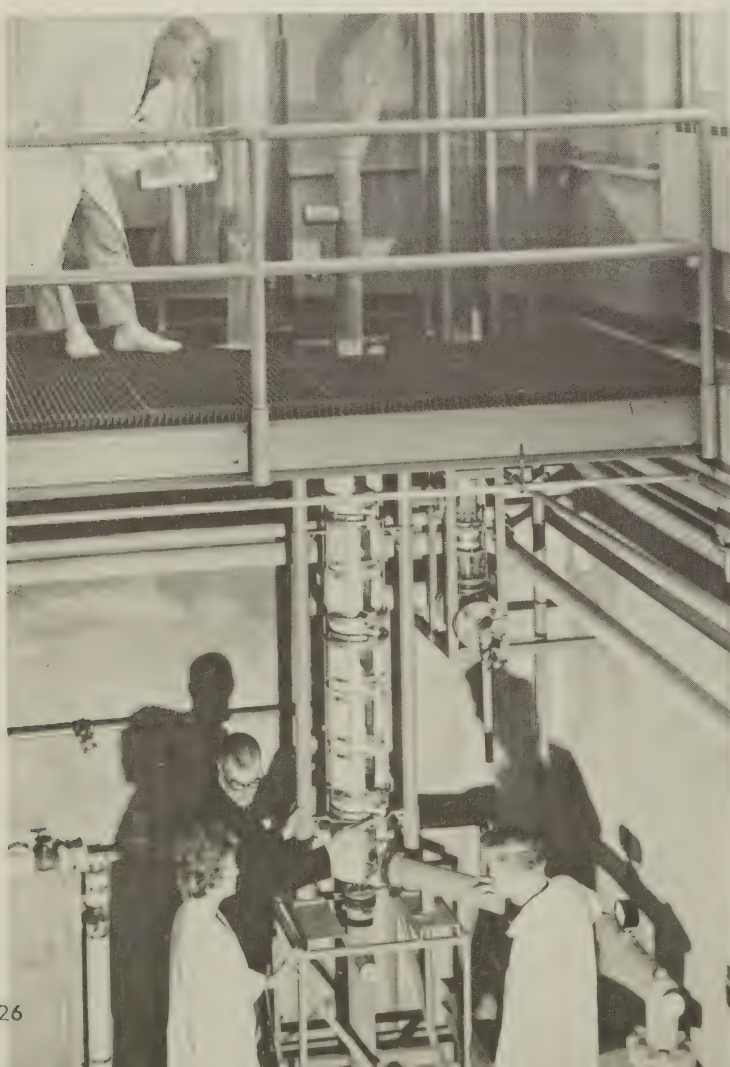
## CHEMICAL TECHNOLOGY

*Fortune* Magazine has predicted that this will be known as "The Chemical Century," and the DuPont Corporation has adopted the slogan, "Better Things for Better Living Through Chemistry." In recent years chemical processes have been creating new materials at such a rapid pace that this industry now accounts for about one-fifth of the gross national product.

But there is a serious problem facing the chemical industry. It is a shortage of trained technical personnel. *Chemical Engineering*, a trade journal, reports: "The industry enters a new era in which the shortage of technical men will be a major controlling factor—if not limiting factor—in any future expansion plans."

Among the workers needed are technicians who are capable of filling responsible positions in research, development and testing laboratories, in pilot plants and production. The Chemical Technology program at Broome Tech is designed to prepare ambitious and reliable young men and women as engineering technicians in this fast-growing industry.

The Chemical Technology curriculum is accredited by the Engineers Council for Professional Development.





# Chemical Technology

## 1st YEAR

			Hours Per Week		
			Class	Lab	Credits
<b>Term 1</b>					
GE 101	English .....	3	0	3	
MA 140	College Algebra and Trigonometry .....	4	0	4	
PH 140	Physics .....	3	2	4	
CH 110	Chemistry .....	3	3	4	
MT 102	Engineering Drawing .....	0	6	2	
			13	11	17
<b>Term 2</b>					
GE 102	English .....	3	0	3	
GE 120	Economics .....	3	0	3	
MA 141	Analytic Geometry and Calculus .....	3	0	3	
PH 141	Physics .....	3	2	4	
CH 111	Chemistry .....	3	3	4	
			15	5	17
<b>Term 3</b>					
GE 103	English .....	3	0	3	
MA 142	Analytic Geometry and Calculus .....	3	0	3	
PH 142	Physics .....	3	2	4	
CH 113	Chemistry .....	3	0	3	
CH 131	Chemistry (Qualitative) .....	3	4	5	
			15	6	18

## 2nd YEAR

<b>Term 4</b>					
	*Elective .....	3	0	3	
CH 241	Quantitative Chemistry .....	4	9	7	
CH 251	Organic Chemistry .....	3	6	5	
CH 261	Chemical Engineering Unit Operations ..	3	0	3	
			13	15	18
<b>Term 5</b>					
GE 110	Psychology .....	3	0	3	
	**Elective .....	0-3	0	0-3	
CH 242	Quantitative Chemistry .....	3	6	5	
CH 252	Organic Chemistry .....	3	6	5	
CH 262	Chemical Engineering Unit Operations ..	3	3	4	
			12-15	15	17-20
<b>Term 6</b>					
GE 130	Sociology .....	3	0	3	
CH 243	Quantitative Chemistry .....	3	6	5	
CH 253	Organic Chemistry .....	3	6	5	
CH 263	Chemical Engineering Unit Operations ..	3	6	5	
			12	18	18

\*(Required)

AD 120 Computer Programming  
or  
General Education Elective or  
MA 240 Mathematics

\*\* (Optional)

General Education Elective or  
Mathematics MA 240 or 241

## CIVIL TECHNOLOGY



The construction industry, considering all related goods and services such as manufacturing and transportation, is the largest industry in the country. The unparalleled activity in construction has pointed up a severe shortage of technical personnel in this field.

This shortage has been made more acute by activation of new multibillion dollar state and federal highway programs, by the erection of new educational and industrial plants, and by the continued expansion in home building. Civil Technology has been designed to help alleviate this shortage.

The Civil and Mechanical curriculums are identical for the first term. This will permit a student in this department to attend college for one full term before it becomes necessary to make his final selection.

Graduates of this program are engineering technicians and are qualified to work as assistants to professional and supervisory persons such as engineers, architects, construction superintendents, surveyors and contractors.

Many openings exist in the federal, state and local governments. Other fields which attract graduates are sales of building materials and construction equipment, purchasing, testing of construction materials, drafting, estimating, specification writing, and inspection.

This curriculum is accredited by the Engineers Council for Professional Development (ECPD).

# Civil Technology

## 1st YEAR

### Hours Per Week

Term 1		Class	Lab	Credits
GE 101	English .....	3	0	3
MA 140	College Algebra & Trigonometry .....	4	0	4
PH 140	Physics .....	3	2	4
CH 104	Chemistry .....	3	2	4
MT 130	Manufacturing Processes .....	2	2	3
MT 110	Engineering Drawing .....	0	3	1
MT 151	Orientation .....	1	0	0
		16	9	19

### Term 2

GE 102	English .....	3	0	3
MA 141	Analytic Geometry & Calculus .....	3	0	3
PH 141	Physics .....	3	2	4
CT 119	Plain Concrete .....	2	3	3
MT 155	Applied Mechanics .....	3	0	3
BU 158	Construction Law .....	3	0	3
		17	5	19

### Term 3

GE 103	English .....	3	0	3
MA 142	Analytic Geometry & Calculus .....	3	0	3
ET 135	Electricity (DC) .....	3	2	4
MT 257	Strength of Materials .....	3	3	4
CT 110	Architectural Drawing .....	0	3	1
CT 140	Surveying .....	3	6	5
		15	14	20

### Term 4

## 2nd YEAR

GE 110	Psychology .....	3	0	3
	*Elective .....	0-3	0	0-3
ET 136	Electricity (AC) .....	3	2	4
CT 211	Architectural Drawing .....	0	3	1
CT 254	Strength of Materials .....	3	0	3
CT 141	Surveying .....	2	6	4
		11-14	11	15-18

### Term 5

GE 120	Economics .....	3	0	3
	**Elective .....	0-3	0	0-3
CT 212	Architectural Drawing .....	0	3	1
CT 270	Soil Mechanics .....	3	3	4
CT 220	Reinforced Concrete Design .....	3	3	4
CT 283	Route Surveying & Highway Design ....	3	3	4
		12-15	12	16-19

### Term 6

GE 130	Sociology .....	3	0	3
CT 221	Structural Steel Design .....	3	3	4
CT 230	Building Design .....	3	3	4
CT 284	Highway Design .....	3	3	4
CT 250	Estimating & Construction Planning .....	3	3	4
		15	12	19

\*(Optional)

AD 120 Computer Programming or

CT 260 Hydraulics or

MA 240 Mathematics

\*\* (Optional)

CT 131 Heating, Ventilating &

Air Conditioning or

Mathematics MA 240 or 241



## DENTAL HYGIENE

The Dental Hygiene curriculum offers women a fine opportunity for a career, as dental hygienists are in great demand.

The department is equipped with the most modern equipment, and the students learn to perform clinical, educational and assisting duties. These services include X-raying, scaling and polishing of patients' teeth, applying fluoride solutions, individual or group dental health instruction, and assisting in general dental office procedure.

Graduates of this program work in private dental offices, public health agencies, industry, research programs, and public school systems.

The curriculum is fully accredited by the Council on Dental Education of the American Dental Association, and the graduates are eligible to take state board examinations and the National Board examination. New York, Pennsylvania and 37 other states now accept the results of the National Board examinations.

Graduates of Broome Technical Community College are eligible for a provisional teaching certificate in New York State and to pursue a permanent teaching certificate. They may also continue to study for a Bachelor of Science Degree in Health Education, for which a formal arrangement has been made with the State University College at Cortland, New York.



# Dental Hygiene

			1st YEAR			Hours Per Week		
Term 1			Class	Lab	Credits			
PE 109	First Aid .....	1	0	1				
GE 101	English .....	3	0	3				
CH 101	Chemistry .....	3	3	4				
BI 171	Anatomy and Physiology .....	3	2	4				
DH 140	Dental Anatomy .....	2	2	3				
DH 100	Dental Hygiene and Ethics .....	2	0	2				
DH 121	Hygiene .....	2	0	2				
		16	7	19				
Term 2								
GE 102	English .....	3	0	3				
CH 102	Chemistry .....	3	3	4				
BI 172	Anatomy and Physiology .....	3	2	4				
BI 175	Histology and Embryology .....	2	2	3				
DH 101	Dental Manikin Practice .....	1	4	3				
DH 141	Dental Anatomy .....	2	2	3				
		14	13	20				
Term 3								
GE 103	English .....	3	0	3				
BI 159	Microbiology .....	3	4	5				
DH 102	Dental Manikin Practice .....	1	4	3				
DH 153	Radiology .....	3	0	3				
DH 158	Dental Office Practice .....	2	2	3				
BU 161	*Typewriting .....	0	5	2				
		12	15	19				
			2nd YEAR					
Term 4								
GE 110	Psychology .....	3	0	3				
BI 285	Pharmacology .....	3	0	3				
DH 204	Clinical Dental Hygiene .....	0	12	4				
DH 244	Preventive Dentistry .....	4	0	4				
DH 254	General Pathology .....	2	0	2				
DH 283	Dental Health Education .....	2	2	3				
		14	14	19				
Term 5								
BI 287	Public Health .....	2	0	2				
DH 205	Clinical Dental Hygiene .....	0	12	4				
DH 260	Dental Lab Practice .....	2	2	3				
DH 261	Nutrition .....	3	0	3				
DH 255	Oral Pathology .....	2	0	2				
DH 267	Anesthesia .....	2	0	2				
DH 285	Health Services in Schools .....	3	0	3				
		14	14	19				
Term 6								
GE 104	Effective Speaking .....	3	0	3				
GE 120	Economics .....	3	0	3				
GE 130	Sociology .....	3	0	3				
DH 206	Clinical Dental Hygiene .....	0	12	4				
DH 264	School Organization .....	3	0	3				
DH 268	Special Dental Practice .....	2	2	3				
		14	14	19				

\*If a student has satisfactorily completed a course in Typewriting in the secondary school, a General Education course may be substituted.

# ELECTRICAL TECHNOLOGY

Few people are unaware what an important part electricity plays in our daily lives, in conveniences like radio, television, lighting and innumerable kitchen appliances.

But electricity is also one of the cornerstones upon which space exploration and our national defense are built. The amazing development of radar, electronics and solid state hardware is based on electricity.

The recent rapid advances in electronics and related electrical fields have created a tremendous need for engineers, engineering technicians and specialists to meet the needs of national defense and the scientific economy and life of the future.

Two-year technical colleges, like Broome Tech, have become increasingly important in preparing better trained men for work in the electrical field. These colleges train men and women to do highly specialized technical work in half the time of a four-year college. Although few realize it, there is an excellent place for women in the electrical field.

Job opportunities are in such areas as electrical design drafting, technical sales, electronic computers, sonar and guided missiles. Also in power generation and distribution, communications and the design and evaluation of electrical equipment.

Some of the companies that have hired Broome Tech Electrical Technology graduates in recent years are General Electric, Westinghouse, IBM, Bell Telephone, the Argonne Laboratories of the University of Chicago and New York State Electric and Gas Corp.

This curriculum is accredited by the Engineers Council for Professional Development (ECPD).





# Electrical Technology

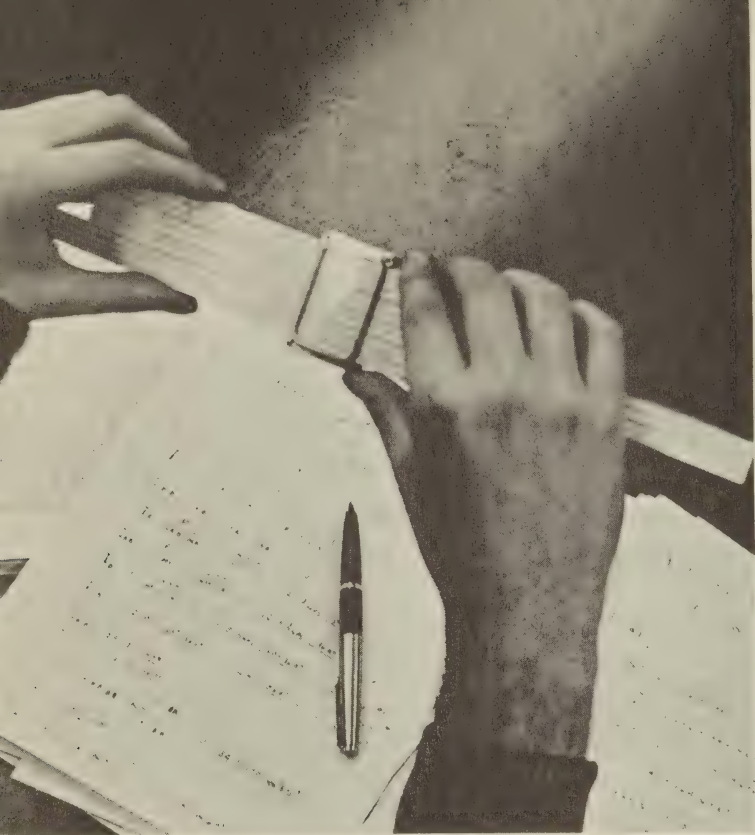
1st YEAR			Hours Per Week		
Term 1			Class	Lab	Credits
GE 101	English .....		3	0	3
ET 104	Industrial Safety and First Aid .....		2	0	2
MA 140	College Algebra and Trigonometry .....		4	0	4
ET 101	Manufacturing Processes .....		1	3	2
ET 110	Physics (Fundamentals for Electricity) ....		4	3	5
ET 130	Engineering Drawing .....		0	3	1
			14	9	17
Term 2					
GE 102	English .....		3	0	3
MA 141	Analytic Geometry and Calculus .....		3	0	3
ET 102	Electrical Construction and Maintenance		1	3	2
ET 111	Physics (Electricity and Magnetism) ....		4	3	5
ET 112	Semiconductor Fundamentals .....		4	0	4
ET 131	Engineering Drawing .....		0	3	1
			15	9	18
Term 3					
GE 103	English .....		3	0	3
MA 142	Analytic Geometry and Calculus .....		3	0	3
ET 103	Electrical Construction and Maintenance		0	3	1
ET 132	Engineering Drawing .....		0	3	1
ET 120	Electrical Circuits .....		4	3	5
ET 123	Electronics .....		4	3	5
			14	12	18
Term 4	2nd YEAR				
GE 120	Economics .....		3	0	3
	*Elective .....		3	0	3
ET 230	Electrical Design .....		0	3	1
ET 240	Electrical Machines .....		4	3	5
ET 251	Electronics .....		4	3	5
ET 223	Network Analysis .....		4	0	4
			18	9	21
Term 5					
GE 130	Sociology .....		3	0	3
	**Elective .....		3	0	3
ET 231	Electrical Design .....		0	3	1
ET 241	Electrical Machines .....		4	3	5
ET 252	Electronics .....		4	3	5
ET 261	Organization and Management .....		3	0	3
			17	9	20
Term 6					
GE 110	Psychology .....		3	0	3
ET 232	Electrical Design .....		0	3	1
ET 253	Electronics .....		4	3	5
ET 242	Automatic Controls .....		4	3	5
ET 262	Industrial Relations .....		3	0	3
			14	9	17

\*Required

AD 120 Computer Programming or  
MT 152 Statics or  
MA 240 Mathematics

\*\*Required

MT 153 Strength of Materials or  
Mathematics MA 240 or 241 or  
ET 263 Engineering Economics



## ENGINEERING SCIENCE

Although the level of work covered in the Engineering Science curriculum is primarily designed to prepare graduates to continue their studies in the engineering field in four-year colleges and universities, there are employment opportunities for qualified graduates.

The emphasis in this program is on mathematics and physics, so that graduates can transfer to four-year schools into the junior year in such fields as physics, engineering and mathematics.

Students have transferred in the last two years to such colleges and universities as Rensselaer Polytechnic Institute, Syracuse and Clarkson.

Some of the job opportunities for those who prefer to seek immediate employment lie in the engineering technician field in such areas as assistants to engineers in research and development, and positions involving the application of mathematics.

In order for a high school graduate to qualify for admission to the Engineering Science curriculum, he or she must have shown high academic potential on the admission tests, and demonstrated superior ability in science and mathematics in high school.

Students entering Broome Technical Community College who wish to continue studying for their engineering degrees will find this the most appropriate course of study.

# Engineering Science

		1st YEAR			Hours Per Week		
Term 1		Class	Lab	Credits			
LA 130	English Composition .....	3	0	3			
MA 170	Analytic Geometry & Calculus .....	4	0	4			
PH 170	Physics (Mechanics) .....	3	3	4			
CH 110	Chemistry .....	3	3	4			
MT 103	Engineering Drawing .....	0	6	2			
		13	12	17			
Term 2							
LA 131	English Composition .....	3	0	3			
MA 171	Analytic Geometry & Calculus .....	4	0	4			
PH 171	Physics (Mechanics & Heat) .....	3	3	4			
CH 111	Chemistry .....	3	3	4			
MT 112	Descriptive Geometry .....	1	2	2			
AD 110	Introduction to Computer Programming	1	0	1			
		15	8	18			
Term 3							
LA 132	English Composition .....	3	0	3			
MA 172	Analytic Geometry & Calculus .....	4	0	4			
PH 172	Physics (Electricity & Magnetism) .....	3	3	4			
CH 112	Chemistry .....	3	3	4			
PH 192	Statics .....	4	0	4			
		17	6	19			
		2nd YEAR					
Term 4							
LA 155	Economics .....	3	0	3			
MA 270	Analytic Geometry & Calculus .....	3	0	3			
PH 270	Physics (Light & Sound) .....	3	3	4			
PH 290	Dynamics .....	4	0	4			
MT 165	Metallurgy .....	3	3	4			
		16	6	18			
Term 5							
LA 156	Economics .....	3	0	3			
MA 271	Differential Equations .....	3	0	3			
PH 271	Physics (Atomic) .....	3	3	4			
ET 125	Electrical Circuits .....	3	3	4			
MT 254	Strength of Materials .....	3	3	4			
		15	9	18			
Term 6							
LA 157	Economics .....	3	0	3			
MA 272	Differential Equations .....	3	0	3			
PH 272	Physics (Nuclear) .....	3	3	4			
MA 273	LaPlace Transforms	3	0.3	3.4			
PH 280	Astronomy						
ET 126	Electrical Circuits .....	3	3	4			
		15	6.9	17.18			



# Engineering Science Chemical Engineering Option

## 1st YEAR

(Freshman Year same as Engineering Science on Page 35)

## 2nd YEAR

			Hours Per Week		
			Class	Lab	Credits
<b>Term 4</b>					
LA	155	Economics .....	3	0	3
MA	270	Analytic Geometry and Calculus .....	3	0	3
CH	251	Organic Chemistry .....	3	6	5
CH	261	Chemical Engineering Stoichiometry .....	3	0	3
PH	290	Dynamics .....	4	0	4
			16	6	18
<b>Term 5</b>					
LA	156	Economics .....	3	0	3
MA	271	Differential Equations .....	3	0	3
PH	270	Physics (Light and Sound) .....	3	3	4
CH	252	Organic Chemistry .....	3	6	5
CH	265	Chemical Engineering Stoichiometry .....	3	0	3
			15	9	18
<b>Term 6</b>					
LA	157	Economics .....	3	0	3
MA	272	Differential Equations .....	3	0	3
PH	272	Physics (Nuclear) .....	3	3	4
CH	253	Organic Chemistry .....	3	6	5
CH	266	Survey of Transfer Operations .....	3	2	4
			15	11	19

## LIBERAL ARTS AND SCIENCES

The Liberal Arts curriculum is primarily intended to enable a student to take the first two years of a four-year degree within the community college.

This is a two-year, university-parallel program designed especially for those who wish to continue their college education at a four-year college or university. It offers an Associate in Arts Degree.

Students finishing this curriculum have completed a breadth of education preparatory to such professional careers as law, medicine and education. The required and elective courses give the students essential credits in such areas as mathematics, language, science, social studies and the humanities.

This curriculum, moreover, can perform an exploratory function for many students. It is regarded as an ideal course of study for those who have not yet decided on a specific career.

The program enables them to complete certain studies while they are making their career decisions.

Students entering Liberal Arts should give strong consideration to the foreign language elective. A survey reveals over 88% of the colleges in the United States now require two or more years of a foreign language for the Bachelor of Arts degree and 69% require two or more years of foreign language for the Bachelor of Science degree.



# Liberal Arts and Sciences

		Hours Per Week		
		Class	Lab	Credits
<b>1st YEAR</b>				
<b>Term 1</b>				
	English Composition .....	3	0	3
	Development of Western Civilization .....	3	0	3
	**Mathematics or Elective .....	3-4	0	3-4
	Biology, Chemistry or Physics .....	3	3	4
	Language or Philosophy .....	3	0	3
	Physical Education .....	0	2	1
		15-16	5	17-18
<b>Term 2</b>				
	English Composition .....	3	0	3
	Development of Western Civilization .....	3	0	3
	**Mathematics or Elective .....	3-4	0	3-4
	Biology, Chemistry or Physics .....	3	3	4
	Language or Philosophy .....	3	0	3
	Physical Education .....	0	2	1
		15-16	5	17-18
<b>Term 3</b>				
	English Composition .....	3	0	3
	Development of Western Civilization .....	3	0	3
	**Mathematics or Elective .....	3-4	0	3-4
	Biology, Chemistry or Physics .....	3	3	4
	Language or Philosophy .....	3	0	3
	Physical Education .....	0	2	1
		15-16	5	17-18
<b>2nd YEAR</b>				
<b>Term 4</b>				
	English Literature .....	3	0	3
	Social Science Elective .....	3	0	3
	Language or Elective .....	3	0	3
	*Electives .....	6	0-2	6-7
	Physical Education .....	0	2	1
		15	2-4	16-17
<b>Term 5</b>				
	English Literature .....	3	0	3
	Social Science Elective .....	3	0	3
	Language or Elective .....	3	0	3
	*Electives .....	6	0-2	6-7
	Physical Education .....	0	2	1
		15	2-4	16-17
<b>Term 6</b>				
	English Literature .....	3	0	3
	Social Science Elective .....	3	0	3
	Language or Elective .....	3	0	3
	*Electives .....	6	0-2	6-7
	Physical Education .....	0	2	1
		15	2-4	16-17

\*Electives can be chosen for a concentration in the areas of humanities, social science, mathematics, science, or business.

\*\*Students who have completed 3½ units of secondary school mathematics may enroll in an elective subject.



# Liberal Arts

## Science-Emphasis Option

Students who intend to continue their education in such fields as medicine, dentistry, pharmacy are advised to take this option.

1st YEAR		Hours Per Week		
Term 1		Class	Lab	Credits
	English Composition .....	3	0	3
	Development of Western Civilization ....	3	0	3
	*Mathematics or Elective .....	3	0	3
	Science .....	3	3	4
	Science .....	3	3	4
	Physical Education .....	0	2	1
		15	8	18
Term 2	English Composition .....	3	0	3
	Development of Western Civilization ....	3	0	3
	*Mathematics or Elective .....	3	0	3
	Science .....	3	3	4
	Science .....	3	3	4
	Physical Education .....	0	2	1
		15	8	18
Term 3	English Composition .....	3	0	3
	Development of Western Civilization ....	3	0	3
	*Mathematics or Elective .....	3	0	3
	Science .....	3	3	4
	Science .....	3	3	4
	Physical Education .....	0	2	1
		15	8	18
Term 4	2nd YEAR			
	Literature .....	3	0	3
	Social Science .....	3	0	3
	Science .....	3	3	4
	Science .....	3	3	4
	Humanities Elective .....	3	0	3
	Physical Education .....	0	2	1
		15	8	18
Term 5	Literature .....	3	0	3
	Social Science .....	3	0	3
	Science .....	3	3	4
	Science .....	3	3	4
	Humanities Elective .....	3	0	3
	Physical Education .....	0	2	1
		15	8	18
Term 6	Literature .....	3	0	3
	Social Science .....	3	0	3
	Science .....	3	3	4
	Science .....	3	3	4
	Humanities Elective .....	3	0	3
	Physical Education .....	0	2	1
		15	8	18

The student should be advised that this curriculum presumes a high level of academic preparation in the secondary school. The student should consult with his faculty advisor when he is doubtful about the adequacy of his pre-college, academic preparation. Sciences may be chosen from Biology, Chemistry, and Physics.

\*Students who have completed  $3\frac{1}{2}$  units of secondary school mathematics may enroll in an elective subject.

## MECHANICAL TECHNOLOGY

The nature of industry today makes it more important than ever that applicants for employment have a high degree of technical competence. The purpose of the Mechanical Technology curriculum is to prepare qualified young people of our community to fill the growing demand in industry and business for engineering technicians in the mechanical field.

Recent studies of our complex industrial economy show a critical need for engineering technicians. Many more are needed than can be supplied by two-year colleges, which explains why graduates of this curriculum have little difficulty finding jobs.

Initial employment opportunities are in the area between the skilled craftsman and the professional engineer, with the emphasis in the direction of the engineer.

Recent graduates have been employed in such areas as design drafting, product design, metallurgical laboratories, quality control, time study, purchasing, technical writing and process planning, to name just a few. Some of the companies that hired last year's graduates are IBM, Scintilla Division of Bendix Corp. in Sidney, Ansco, DuPont and Eastman Kodak. Many graduates accept positions far beyond the boundaries of New York State, even though the attempt is made to satisfy the needs of industry in Broome County.

This curriculum is accredited by the Engineers Council for Professional Development (ECPD).



# Mechanical Technology

## 1st YEAR

Hours Per Week

Term 1		Class	Lab	Credits
GE 101	English .....	3	0	3
MA 140	College Algebra & Trigonometry .....	4	0	4
PH 140	Physics .....	3	2	4
CH 104	Chemistry .....	3	2	4
MT 130	Manufacturing Processes .....	2	2	3
MT 110	Engineering Drawing .....	0	3	1
MT 151	Orientation .....	1	0	0
		16	9	19

### Term 2

GE 102	English .....	3	0	3
GE 110	Psychology .....	3	0	3
MA 141	Analytic Geometry & Calculus .....	3	0	3
PH 141	Physics .....	3	2	4
MT 131	Manufacturing Processes .....	1	3	2
MT 111	Engineering Drawing & Descriptive Geometry .....	1	3	2
MT 155	Applied Mechanics .....	3	0	3
		17	8	20

### Term 3

GE 103	English .....	3	0	3
MA 142	Analytic Geometry & Calculus .....	3	0	3
PH 142	Physics .....	3	2	4
MT 132	Manufacturing Processes .....	1	3	2
MT 156	Applied Mechanics .....	3	0	3
MT 165	Metallurgy .....	3	3	4
		16	8	19

### Term 4

## 2nd YEAR

GE 120	Economics .....	3	0	3
	*Elective .....	0-3	0	0-3
ET 127	Electricity .....	3	3	4
MT 240	Precision Measurement .....	1	3	2
MT 261	Fluid Mechanics .....	3	0	3
CT 153	Strength of Materials .....	3	2	4
		13-16	8	16-19

### Term 5

	**Elective .....	0-3	0	0-3
ET 128	Electricity .....	3	3	4
MT 220	Mechanical Design .....	2	3	3
MT 260	Thermodynamics .....	3	3	4
MT 267	Statistical Quality Control .....	3	2	4
		11-14	11	15-18

### Term 6

GE 130	Sociology .....	3	0	3
ET 129	Electronics .....	3	3	4
MT 135	Materials and Processes .....	3	3	4
MT 221	Mechanical Design .....	3	3	4
MT 262	Mechanical Equipment .....	3	3	4
		15	12	19

#### \*Optional

AD 120 Computer Programming or  
MA 240 Mathematics or  
MT 290 Organization & Management

#### \*\*Optional

Mathematics MA 240 or 241 or  
MT 291 Organization & Manage-  
ment





## **MEDICAL OFFICE ASSISTANT**

The place of the Medical Office Assistant is a relatively new one in the medical field. Graduates of this curriculum have employment opportunities in the physicians' offices, hospital laboratories and record rooms, and in related fields.

Broome Tech prepares young women for this career by offering a specialized training that combines secretarial work with clinical procedures. Experience has shown that intensive instruction in the courses of the business field blend well with the laboratory work to produce a well qualified medical office assistant.

Thus a young woman must be versatile to qualify for this kind of career. She must also be fitted by training and personality to work with professional medical people in various ways.

In addition to a basic knowledge of such skills as typing, accounting and office procedure, she must know such technical subjects as anatomy, physiology, chemistry and pharmacology. She must also master the clinical laboratory procedures of urinalysis, hematology, and blood chemistries to complete the program.

There have been too few graduates in recent years to meet the demand for people in this important phase of medical service. As a result, employment opportunities have been good.

# Medical Office Assistant

1st YEAR			Hours Per Week		
Term 1			Class	Lab	Credits
GE 101	English .....	3	0	3	
MA 101	Mathematics .....	3	0	3	
CH 101	Chemistry .....	3	3	4	
MO 101	Ethics and Orientation .....	0	2	1	
BI 131	Zoology .....	3	3	4	
BU 161	*Typewriting or Elective .....	0	5	2	
			12	13	17

Term 2					
GE 102	English .....	3	0	3	
CH 102	Chemistry .....	3	3	4	
BI 132	Anatomy .....	3	3	4	
BU 162	Typewriting .....	0	5	2	
BU 164	Shorthand .....	2	3	3	
			11	14	16

Term 3					
GE 103	English .....	3	0	3	
MO 120	Medical Office Procedures .....	1	3	2	
BI 133	Physiology .....	3	6	5	
BU 163	Typewriting .....	2	3	3	
BU 165	Shorthand .....	2	3	3	
			11	15	16

## 2nd YEAR

Term 4					
GE 120	Economics .....	3	0	3	
BI 234	Physiology .....	2	4	4	
BI 250	Microbiology .....	3	4	5	
BU 280	**Medical Shorthand .....	2-2	3-4	3-4	
BU 283	Office Practice (Medical) .....	2	3	3	
			12	14-15	18-19

Term 5					
GE 130	Sociology .....	3	0	3	
BI 235	Physiology .....	2	4	4	
BI 251	Microbiology .....	2	4	4	
BI 285	Pharmacology .....	3	0	3	
BU 281	**Medical Shorthand .....	2-3	3-2	3-4	
BU 284	Office Practice (Medical) .....	1	3	2	
			13-14	14-13	19-20

Term 6					
GE 110	Psychology .....	3	0	3	
BI 252	Microbiology .....	2	4	4	
BU 282	**Medical Shorthand .....	2-2	3-4	3-4	
BU 285	Office Practice (Medical) .....	2	3	3	
BU 151	Business English .....	3	0	3	
			12	10-11	16-17

\*If a student has satisfactorily completed a Regents unit of Typewriting of 75% or the equivalent, an elective course must be substituted.

\*\*Optional Courses (all 4 credits)

BI 236 Histology (Term 4)

BI 237 Genetics (Term 5)

BI 238 Zoology (Term 6)

# PRE-TECHNICAL PROGRAM

The Pre-Technical program offers a unique college opportunity to those high school graduates who are not adequately prepared for admission to college. It consists of a year of study at Broome Technical Community College, taking courses that will prepare one for entry into the regular college curriculum, primarily in one of the technical fields.

High school graduates who either do not have the proper courses or high enough grades to enter college can bolster their entry qualifications by taking this Pre-Technical program. This has been the gateway to college for many students who did not apply themselves sufficiently to their high school studies or who have "found" themselves late in their high school careers.

Many students who have worked a year or two after high school have also used this "Pre-Tech" program to gain admission to Broome Technical Community College, as well as to other schools.

Students study mathematics, chemistry, physics, mechanical drawing and English during their Pre-Tech year. The teaching pace is faster than in high school, yet not as rapid as in college.

The Pre-Tech program is seven years old, and experience has shown that only about seven per cent of those who complete the Pre-Tech year and go on to college fail to get their degrees, compared with the national average of about 45% who failed to earn degrees. Thus the Pre-Tech training, which has grown from 32 students in 1957 to 123 last year, has given many an additional opportunity to prepare for college.

Pre-Tech students have all the privileges of regular full-time day students, except that they are not eligible to play on varsity athletic teams and they receive no college credits for most of their courses.

## Pre-Technical Curriculum

		1st YEAR		
		Hours Per Week		
Term 1		Class	Lab	Credits
PT 150	English .....	3	0	0
PT 110	Elements of Technical Mathematics .....	4	4	0
PT 101	Physical Science .....	6	0	0
PT 120	Technical Calculations .....	0	4	0
PT 130	Engineering Drawing .....	0	3	1
		13	11	1
Term 2				
PT 151	English .....	3	0	0
PT 111	Elements of Technical Mathematics .....	4	4	0
PT 102	Physical Science .....	6	0	0
PT 121	Technical Calculations .....	0	4	0
PT 131	Engineering Drawing .....	0	3	1
		13	11	1
Term 3				
PT 152	English .....	3	0	0
PT 112	Elements of Technical Mathematics .....	5	0	0
PT 103	Physical Science .....	3	0	0
PT 122	Technical Calculations .....	0	2	0
PT 140	Chemistry .....	3	2	0
PT 132	Engineering Drawing .....	0	3	1
		14	7	1



# X-RAY TECHNOLOGY

X-ray technicians are needed in industry, government agencies and doctors' offices, in addition to hospitals. They assist doctors in radiation therapy and in giving X-ray and cobalt 60 treatments, teach students entering the field, and take X-rays of patients to determine the presence of disease or injury.

The course in X-ray Technology consists of 10 months of study at Broome Tech and 14 months at Lourdes Hospital. During the time at Broome Tech, the student attends classes at the college four days a week and spends his fifth day at Lourdes Hospital for an early start to his on-the-job training. After these two years, a student should be qualified to pass the American Registry of Radiologic Technologists examinations.

An X-ray technician needs to understand why things are done, as well as to know how to do them. The first year of study at Broome Tech is, therefore, designed to give the students the proper background to understand the principles involved in the work they will do as X-ray technicians.

Students in this program pay \$600 during the first year and earn approximately \$2,100 the second year for their on-the-job training at Lourdes Hospital. The \$600 paid in the first year includes tuition, all fees and the cost of books and supplies. The second-year earnings consist of \$150 a month for 14 months.

## X-Ray Technology Curriculum

		1st YEAR			Hours Per Week		
Term 1			Class	Lab	Credits		
GE 101	English .....	3	0	3			
BI 171	Anatomy & Physiology .....	3	3	4			
CH 101	Chemistry .....	3	3	4			
MA 101	Mathematics .....	3	0	3			
		12	6	14			
Term 2							
GE 102	English .....	3	0	3			
BI 172	Anatomy & Physiology .....	3	3	4			
CH 102	Chemistry .....	3	3	4			
PH 106	Physics (Mechanics & Heat) .....	2	2	3			
		11	8	14			
Term 3							
GE 103	English .....	3	0	3			
PH 110	Physics (Radiation) .....	2	2	3			
GE 130	Sociology .....	3	0	3			
PH 107	Physics (Electricity & Light) .....	2	2	3			
BU 161	Typewriting .....	0	5	2			
		10	9	14			

**NOTE:** Plus 1 day on-the-job per week at hospital.

### 2nd YEAR At Lourdes Hospital

Orientation and Elementary Radiation Protection, Medical Terminology, Ethics, Principles of Radiographic Exposure, Radiographic Positioning, Radiographic Procedures with contrast materials and special radiographic techniques. Also Radiation Therapy, Medical Use of Isotopes, Survey of Medical and Surgical Diseases, Protection to Patients and Personnel, Departmental Administration and Equipment Maintenance.

# COURSE DESCRIPTIONS

## Numbering System

All Broome Tech course numbers are preceded by two letters which in most instances stand for the department of the College responsible for teaching them. Courses numbered from 100 to 199 are generally first-year level and those from 200 to 299 second-year level.

AD .....	Special Programs (Non-Departmental)
BI .....	Biological Sciences
BU .....	Business
CH .....	Chemical Technology
CT .....	Civil Technology
DH .....	Dental Hygiene
ET .....	Electrical Technology
GE .....	General Education
LA .....	Liberal Arts
MA .....	Mathematics
MO .....	Medical Office Assistant
MT .....	Mechanical Technology
PE .....	Physical Education
PH .....	Physics
PT .....	Pre-Technical

## SPECIAL PROGRAMS

AD 110 Introduction to Computer Programming 1 Credit  
1 Class Hour

Historical development of computers, introduction to data processing systems, binary mathematics and the IBM 1620 digital processing system. Introduction of Fortran with Format, along with flow diagramming and debugging techniques. Some working experience on the 1620 computer at student's convenience.

AD 120 Fundamentals of Computer Programming 3 Credits  
2 Class Hours, 2 Laboratory Hours

Historical development of computers, introduction to data processing systems, binary and octal mathematics, and the IBM 1620 digital processing system. The machine language instructions along with Fortran with Format and the Symbolic programming system will be studied along with flow diagramming and debugging techniques.

Programming drills and exercises in all languages will reinforce the basic principles by providing "hands-on" training.

## BIOLOGICAL SCIENCES

BI 101 Biology 4 Credits  
3 Class Hours, 3 Laboratory Hours

Principles fundamental to living organisms, such as metabolism, genetics, evolution, ecology, and conservation.

BI 102 Biology 4 Credits  
3 Class Hours, 3 Laboratory Hours

Structure, morphology, physiology. Phylogeny of animals and their relatedness.

(Prerequisite: BI 101 Biology)

**BI 103 Biology** **4 Credits**  
**3 Class Hours, 3 Laboratory Hours**  
Structure, physiology, reproduction, and phylogeny of plants; their influence on man.  
**(Prerequisite: BI 102 Biology)**

**BI 131 Zoology** **4 Credits**  
**3 Class Hours, 3 Laboratory Hours**  
Vertebrate zoology, including gross structure and physiology, microscopic details, and organ systems. Lectures and laboratory are introductory to the field of animal life. Detailed dissection of frog.

**BI 132 Anatomy** **4 Credits**  
**3 Class Hours, 3 Laboratory Hours**  
Gross and microscopic anatomy of the human body, with emphasis on form and structure. Detailed dissection and microscopic study of the foetal pig.  
**(Prerequisite: BI 131 Zoology or BI 101 Biology)**

**BI 133 Physiology** **5 Credits**  
**3 Class Hours, 6 Laboratory Hours**  
Fundamental physiological processes and how these processes regulate the human machine. Related laboratory work includes microscopic and chemical tests to acquire dexterity in performing urinalysis, complete blood counts, and electrocardiography.  
**(Prerequisites: BI 132 Anatomy or BI 102 Biology and CH 102 Chemistry or equivalent)**

**BI 159 Microbiology** **5 Credits**  
**3 Class Hours, 4 Laboratory Hours**  
General and medical microbiology. The basic phases of immunology. Asepsis, disinfection, sterilization, cultivation, identification. Tests used for diagnosis and immunization.  
**(Prerequisite: CH 102 Chemistry)**

**BI 171 Anatomy and Physiology** **4 Credits**  
**3 Class Hours, 3 Laboratory Hours**  
Gross and microscopic anatomy of the human body and the function of its parts. Emphasis is on form and structure. Laboratory work includes microscopic anatomy, dissection of the foetal pig and cat, a study of the systems and their inter-relationship. Dental Hygiene students will take a two-hour laboratory.

**BI 172 Anatomy and Physiology** **4 Credits**  
**3 Class Hours, 3 Laboratory Hours**  
Continued study of gross and microscopic anatomy, the relationship of function to structure, with emphasis on basic physiology. Chemical tests and additional dissection. Dental Hygiene students will take a two-hour laboratory.  
**(Prerequisite: BI 171 Anatomy and Physiology)**



- BI 175 Histology and Embryology** **3 Credits**  
**2 Class Hours, 2 Laboratory Hours**  
 Lecture and laboratory study of the fundamental body tissues and different phases of embryonic development. Emphasis on the origin and structure of the tissues of the oral cavity.  
**(Prerequisite: BI 171 Anatomy and Physiology)**
- BI 234 Physiology** **4 Credits**  
**2 Class Hours, 4 Laboratory Hours**  
 Continued study of physiological processes with related laboratory tests, emphasizing blood and circulatory system and structure of the nervous system, as well as functioning of eye and ear.  
**(Prerequisite: BI 133 Physiology)**
- BI 235 Physiology** **4 Credits**  
**2 Class Hours, 4 Laboratory Hours**  
 Emphasis on the body functions of respiration, digestion, metabolism, and excretion. Study of the endocrines. Laboratory work includes related chemical tests and physio-chemical measurements of the body functions.  
**(Prerequisite: BI 234 Physiology)**
- BI 236 Histology** **4 Credits**  
**2 Class Hours, 4 Laboratory Hours**  
 The essential morphological and functional characteristics of tissues and organs of the animal body. Technique of animal tissue preparation, both frozen and imbedded.  
**(Prerequisite: BI 132 Anatomy or BI 102 Biology)**
- BI 237 Genetics** **4 Credits**  
**3 Class Hours, 2 Laboratory Hours**  
 Investigation of basic laws of inheritance, integration of fundamental principles of biology, examination of implications for human welfare.  
**(Prerequisite: BI 102 Biology or BI 131 Zoology)**
- BI 238 Zoology** **4 Credits**  
**2 Class Hours, 4 Laboratory Hours**  
 A study of invertebrate animals, their morphology, physiology, and phylogeny. Detailed study of various types of phyla, especially those of medical importance. Comparison of invertebrates and vertebrates.  
**(Prerequisite: BI 101 Biology or BI 131 Zoology)**
- BI 250 Microbiology** **5 Credits**  
**3 Class Hours, 4 Laboratory Hours**  
 The biology of the common bacteria and related microorganisms. Non-pathogens and pathogens. Basic phases of immunology. Asepsis, disinfection, sterilization, cultivation, identification.  
**(Prerequisite: CH 102 Chemistry or BI 103 Biology or Equivalent)**
- BI 251 Microbiology** **4 Credits**  
**2 Class Hours, 4 Laboratory Hours**  
 Emphasis upon immunity and immunological procedures. Pathogenic bacteria, viruses, true fungi, rickettsiae, and protozoa are studied first hand, from preserved specimens or from microscopic slides.  
**(Prerequisites: BI 250 Microbiology and BI 133 Physiology)**

## **BI 252 Microbiology**

**4 Credits**

**2 Class Hours, 4 Laboratory Hours**

Continued study of the principles of immunity and the practice of serological techniques. Agglutination and precipitation tests in general, inflammation and leucocyte response, blood grouping and typing.

**(Prerequisite: BI 251 Microbiology)**

## **BI 285 Pharmacology**

**3 Credits**

**3 Class Hours**

The action of drugs, their sources, properties, preparation. Administration, the mathematics of pharmacy, and prescription writing.

**(Prerequisites: BI 133 Physiology or BI 172 Physiology and  
BI 250 Microbiology or BI 159 Microbiology)**

## **BI 287 Public Health**

**2 Credits**

**2 Class Hours, Field Trips**

An over-all picture of public health (history, philosophy, structure, services), with emphasis on community dental health. Field trips to various health agencies.

# **BUSINESS**

## **BU 101 Accounting**

**3 Credits**

**2 Class Hours, 2 Laboratory Hours**

Fundamentals of accounting from the books of original entry to the preparation of financial statements.

## **BU 102 Accounting**

**3 Credits**

**2 Class Hours, 2 Laboratory Hours**

Controlling accounts and special journals. Accounting for specific items such as cash, accounts receivable, fixed assets.

**(Prerequisite: BU 101 Accounting)**

## **BU 103 Accounting**

**3 Credits**

**2 Class Hours, 2 Laboratory Hours**

Voucher system, partnerships, corporations, analysis of original statements. Use of practice set of books.

**(Prerequisite: BU 102 Accounting)**

## **BU 121 Finance**

**3 Credits**

**3 Class Hours**

Financial principles and procedures. Detailed analyses of such factors as forms of business organization, corporate organization and problems, financial structure of business groups, financial instruments, surplus and reserves, credit and collections, re-organizations.

## **BU 141 Business Mathematics**

**3 Credits**

**3 Class Hours**

Review of arithmetic operations. Preparation and use of shortcut operations. Instruction, review, and drill in percentage. Cash and trade discounts, markup, payroll, sales, property and other taxes. Simple and compound interest, bank discounts, interest investments, annuities.

## **BU 142 Business Statistics**

**3 Credits**  
**3 Class Hours**

Concepts and mechanics of basic statistical methods applicable to problems of business and economics.

**(Prerequisite: MA 101 Mathematics or equivalent)**

## **BU 145 Business Law**

**3 Credits**  
**3 Class Hours**

Brief study of the federal and state judicial systems. Basic principles of contracts, involving the requisites for valid contracts, parties to the contracts, offer and acceptance, performance and discharge. Applications of contracts to agency, legal aspects of partnerships and corporations, real estate law.

## **BU 146 Business Law**

**3 Credits**  
**3 Class Hours**

Contracts as applied to sales, bailments, carriers, warehousemen. Negotiable instruments, the rights and obligations associated with them.

**(Prerequisite: BU 145 Business Law)**

## **BU 151 Business English**

**3 Credits**  
**3 Class Hours**

Composition and dictation of business correspondence. Preparation of reports and articles.

**(Prerequisite: GE 101 English)**

## **BU 158 Construction Law**

**3 Credits**  
**3 Class Hours**

Brief study of the federal and state judicial systems. Legal aspects concerning the creation of partnerships and corporations. Principles of business law applicable to the construction industry. Fundamentals of business and union contracts, insurance, mechanic's liens, labor-management relations, boundary line rights and obligations, statutes and ordinances, monetary damages, injunction and mandamus, professional registration.

## **BU 161 Typewriting**

**2 Credits**  
**5 Laboratory Hours**

A beginning sequence in touch typewriting to make the operator accurate, rhythmic, and moderately rapid in the operation of the standard makes of office typewriters. Care of the machine, operation of the various parts. Business letters, simple tabulation, and the building of typewriting speed.

## **BU 162 Typewriting**

**2 Credits**  
**5 Laboratory Hours**

A continuation of BU 161 typewriting, with emphasis on speed and accuracy.

**(Prerequisite: BU 161 Typewriting or equivalent)**

## **BU 163 Typewriting**

**3 Credits**  
**2 Class Hours, 3 Laboratory Hours**

Continuation of basic skill building with emphasis on speed and advanced problems. Rough drafts, technical data, specifications, manuscripts, legal papers.

**(Prerequisite: BU 162 Typewriting or equivalent)**



- BU 164 Shorthand** **3 Credits**  
**2 Class Hours, 3 Laboratory Hours**  
 A beginning course in the Gregg system, simplified. Basic principles and theory to promote ability to read fluently from notes and plates. Dictation up to 60 words per minute.
- BU 165 Shorthand** **3 Credits**  
**2 Class Hours, 3 Laboratory Hours**  
 Emphasis on shorthand writing ability at sustained speeds. Dictation from 60 to 100 words per minute.  
**(Prerequisite: BU 164 Shorthand)**
- BU 166 Shorthand** **3 Credits**  
**2 Class Hours, 3 Laboratory Hours**  
 Emphasis on speed in shorthand writing. Transcription at the typewriter from shorthand notes, dictated from non-previewed materials. Dictation from 80 to 120 words per minute.  
**(Prerequisite: BU 165 Shorthand)**
- BU 167 Transcription** **3 Credits**  
**2 Class Hours, 3 Laboratory Hours**  
 Emphasis on punctuation and English grammar. Development of skill in reading shorthand notes and producing from them a mailable manuscript on the typewriter.  
**(Prerequisite: BU 165 Shorthand and BU 162 Typewriting)**
- BU 204 Intermediate Accounting** **3 Credits**  
**2 Class Hours, 2 Laboratory Hours**  
 Assets, liability, capital and operating accounts comprising financial statements. Generally accepted accounting principles followed in the preparation of these statements. Analysis of working capital and preparation of statements of application of funds and cash flow.  
**(Prerequisite: BU 103 Accounting)**
- BU 205 Intermediate Accounting** **3 Credits**  
**2 Class Hours, 2 Laboratory Hours**  
 Advanced study of partnership accounting including liquidations. Corporation accounting including preparation of consolidated statements, treasury stock, bonds and retained earnings.  
**(Prerequisite: BU 204 Intermediate Accounting)**
- BU 206 Intermediate Accounting** **3 Credits**  
**2 Class Hours, 2 Laboratory Hours**  
 Installment sales, home office and branch accounting, financial statement analysis. Special ratios, measurements and analysis of operations.  
**(Prerequisite: BU 205 Intermediate Accounting)**
- BU 207 Cost Accounting** **3 Credits**  
**2 Class Hours, 2 Laboratory Hours**  
 The nature and purpose of cost accounting. Accounting for direct labor, materials, and factory overhead with emphasis on job order costing.  
**(Prerequisite: BU 103 Accounting)**

## **BU 208 Cost Accounting**

**3 Credits**

**2 Class Hours, 2 Laboratory Hours**

Process cost system, standard cost principles and procedures, budgets and direct costing. Uses of cost reports and records for management decision making.

**(Prerequisite: BU 207 Cost Accounting)**

## **BU 209 Distribution Cost**

**3 Credits**

**3 Class Hours**

Methods and procedures of applying cost accounting principles and standard cost methods to administrative, distribution and selling expenses. Measurement and control of distribution cost.

**(Prerequisite: BU 103 Accounting)**

## **BU 220 Payroll Accounting**

**3 Credits**

**2 Class Hours, 2 Laboratory Hours**

Federal legislation and practical application of accounting for social security and tax withholding from the standpoint of the employer

**(Prerequisite: BU 103 Accounting)**

## **BU 222 Federal Tax**

**3 Credits**

**2 Class Hours, 2 Laboratory Hours**

Determination of taxable income and selected aspects of tax accounting. Particular attention is given to the preparation of Federal Income Tax returns of individuals. Preparation of partnership and corporation tax returns.

## **BU 223 Internal Auditing**

**3 Credits**

**2 Class Hours, 2 Laboratory Hours**

Internal auditing is an independent appraisal activity within an organization for the review of accounting, financial and other operations as a basis for service to management. It is a managerial control, which functions by measuring and evaluating the effectiveness of other controls.

**(Prerequisite: BU 103 Accounting)**

## **BU 230 Machine Accounting**

**3 Credits**

**2 Class Hours, 2 Laboratory Hours**

The application of unit record equipment to accounting, statistical, and payroll work. Punched card systems. Visits to local installations

## **BU 231 Machine Accounting**

**3 Credits**

**2 Class Hours, 2 Laboratory Hours**

Programming of unit record equipment by means of wiring diagrams and control panels.

**(Prerequisite: BU 230 Machine Accounting)**

## **BU 232 Machine Accounting**

**3 Credits**

**2 Class Hours, 2 Laboratory Hours**

Comprehensive laboratory projects to demonstrate the entire machine accounting cycle. Design and punching of tabulating cards, programming and write-up of project, tabulation of final reports.

**(Prerequisite: BU 231 Machine Accounting)**

- BU 249 Office Management** **3 Credits**  
**3 Class Hours**
- The science of office management including cost control, work simplification, forms control, office services, office layout.
- BU 250 Office Management** **3 Credits**  
**3 Class Hours**
- A continuation of BU 249 Office Management.  
(Prerequisite: BU 249 Office Management)
- BU 253 Personnel Administration** **3 Credits**  
**3 Class Hours**
- Techniques and methods used to achieve utilization of manpower in business through proper selection, placement, training, job evaluation, wage setting, and employee relations.
- BU 254 Industrial Organization and Management** **3 Credits**  
**3 Class Hours**
- Introduction to the major functions or departments of industry, their interrelationships, and how they are brought together through organization. Methods, cost, production control, product development, finance, physical facilities, quality control, plant engineering, industrial relations, job evaluation, sales, advertising, budgets, records.
- BU 260 Technical Shorthand** **3 Credits**  
**2 Class Hours, 3 Laboratory Hours**
- Emphasis on increasing technical vocabulary. Dictation and transcription of technical material taken from the fields of industry and business. Dictation at 70 to 80 words per minute.  
(Prerequisite: BU 167 Transcription or equivalent)
- BU 261 Technical Shorthand** **3 Credits**  
**2 Class Hours, 3 Laboratory Hours**
- Dictation and transcription of technical material from the fields of scientific research and engineering. Continued emphasis on increasing technical vocabulary. Dictation at 80 to 90 words per minute.  
(Prerequisite: BU 260 Technical Shorthand or equivalent)
- BU 262 Shorthand** **3 Credits**  
**2 Class Hours, 3 Laboratory Hours**
- Specialized training at higher speeds of dictation than are usually found in office situations. Introduction of special shortcuts to increase efficiency in taking dictation. Dictation of a variety of materials, including the Congressional Record. Dictation from 100 to 160 words per minute.  
(Prerequisite: BU 166 Shorthand)
- BU 270 Shorthand Dictation** **3 Credits**  
**2 Class Hours, 3 Laboratory Hours**
- Emphasis on increasing vocabulary. Dictation and transcription of specialized material taken from the fields of law and insurance. Dictation at 70 to 80 words per minute.  
(Prerequisite: BU 167 Transcription or equivalent)



**BU 271 Shorthand Dictation****3 Credits****2 Class Hours, 3 Laboratory Hours**

Dictation and transcription of specialized material taken from the fields of finance and real estate. Continued emphasis on increasing vocabulary. Dictation at 80 to 90 words per minute.

**(Prerequisite: BU 270 Shorthand)****BU 272 Office Machines****4 Credits****2 Class Hours, 4 Laboratory Hours**

Training and laboratory experience in the use of office machines, using a variety of makes and types of adding, calculating, accounting, transcribing, dictating machines and electric typewriters. Introduction to computer programming and Fortran language.

**(Prerequisite: BU 162 Typewriting)****BU 273 Office Machines****4 Credits****2 Class Hours, 4 Laboratory Hours**

A continuation of BU 272 Office Machines. Applied theory of computer programming, using IBM 1620 system.

**(Prerequisite: BU 272 Office Machines)****BU 274 Office Practice****4 Credits****2 Class Hours, 4 Laboratory Hours**

A business laboratory to provide simulated experiences related to the functions and positions of the business office. Emphasis on grooming, work attitudes, and business ethics. Techniques of telephone procedure, duplicating, switchboard operation. Use of standard secretarial office textbook as the basis of discussion and assignments.

**(Prerequisite: BU 163 Typewriting or equivalent)****BU 275 Office Practice****4 Credits****2 Class Hours, 4 Laboratory Hours**

Basic training in the operation of transcribing machines, principal types of adding-calculating machines, and electric typewriters. Fundamentals of filing: alphabetic, geographic, subject, numeric. Projects for advanced study and skill development.

**(Prerequisite: BU 163 Typewriting or equivalent)****BU 280 Medical Shorthand****3 Credits****2 Class Hours, 3 Laboratory Hours**

Introduction of medical vocabulary. Dictation and transcription of medical and business material. Medical prefixes and suffixes. Dictation at 60 to 70 words per minute.

**(Prerequisite: BU 165 Shorthand or equivalent)****BU 281 Medical Shorthand****3 Credits****2 Class Hours, 3 Laboratory Hours**

Emphasis on increasing medical vocabulary. Additional dictation and transcription. Use of medical dictionaries. Dictation at 70 to 80 words per minute.

**(Prerequisite: BU 280 Medical Shorthand or equivalent)****BU 282 Medical Shorthand & Transcription****3 Credits****2 Class Hours, 3 Laboratory Hours**

Transcription and dictation speeds stressed. Continued emphasis on increasing medical vocabulary. Sustained dictation at 80 words per minute.

**(Prerequisite: BU 281 Medical Shorthand)**

- BU 283 Medical Office Practice** **3 Credits**  
**2 Class Hours, 3 Laboratory Hours**
- Basic training in the operation of various types of adding machines. Experience producing mailable transcripts from dictating machines. Theory and practice of filing business records. Telephone procedure.
- (Prerequisite: BU 163 Typwriting or equivalent)
- 
- BU 284 Medical Office Practice** **2 Credits**  
**1 Class Hour, 3 Laboratory Hours**
- The science of record keeping from the basic definition of terms and the fundamental accounting equation through books of original entry, final entry, and the trial balance. Practical problems based on each topic.
- 
- BU 285 Medical Office Practice** **3 Credits**  
**2 Class Hours, 3 Laboratory Hours**
- Business management of the physician's office. Practical use of medical forms used by insurance, workmen's compensation and welfare departments.
- (Prerequisites: BU 283 Office Practice and BU 284 Accounting)
- 
- BU 290 Salesmanship** **3 Credits**  
**3 Class Hours**
- The principles of sales with practical applications. Prospecting, product and service analysis, meeting objections, demonstrating, sales psychology, preparation of sales presentations.
- 
- BU 291 Sales Management** **3 Credits**  
**3 Class Hours**
- Development of techniques of control in the administration of sales forces. Incentive systems, territory planning, development of sales potentials, and personnel problems peculiar to this field.
- (Prerequisite: BU 290 Salesmanship)
- 
- BU 292 Marketing** **3 Credits**  
**3 Class Hours**
- The distributive phase of economics, from the time a good or service is produced up to the point of consumption. Marketing functions, classification of goods and of markets, marketing channels and agents in each. Relationship to advertising and sales promotion, salesmanship, regulations and law affecting marketing. Lectures, discussions, case problems.
- 
- BU 293 Advertising** **3 Credits**  
**3 Class Hours**
- Development, economics, and functions of advertising. Cost and application, the various media, advertising as a vocation, testing and research utilization. Some work on preparation of copy and layouts. Lectures, demonstrations, field trips.
- 
- BU 294 Advertising** **3 Credits**  
**3 Class Hours**
- A continuation of BU 293 Advertising.
- (Prerequisite: BU 293 Advertising)

## BU 295 Market Research

3 Credits  
3 Class Hours

Methods of collecting and interpreting marketing information. Specific applications to problems in market development, market potential, and sales management.

(Prerequisites: BU 292 Marketing and BU 142 Business Statistics)

## BU 296 Credit

3 Credits  
3 Class Hours

Types of credit, credit department organization, credit reports and information, credit risk factors, collection procedures.

# CHEMISTRY

## CH 101 Chemistry

4 Credits  
3 Class Hours, 3 Laboratory Hours

Fundamental concepts of inorganic chemistry including composition of substances, kinetic and molecular theories, atomic structure and bonding, solutions and colloids, ions in solution, and nucleonics.

## CH 102 Chemistry

4 Credits  
3 Class Hours, 3 Laboratory Hours

Fundamental concepts of organic chemistry, including carbohydrates, lipids, and proteins and their role in metabolism.

(Prerequisite: CH 101 Chemistry or CH 110 Chemistry)

## CH 104 Chemistry

4 Credits  
3 Class Hours, 2 Laboratory Hours

Basic laws, principles, and theories of chemistry. Structure of matter, periodicity, chemical action, states of matter and solutions.

## CH 110 Chemistry

4 Credits  
3 Class Hours, 3 Laboratory Hours

Fundamental principles and laws underlying chemical action, their integration with the theories of atomic structure and chemical bonding, and correlation with the position of the elements on the periodic chart. Topics discussed are atomic structure, the periodic chart, chemical bonding, water, and the states of matter.

## CH 111 Chemistry

4 Credits  
3 Class Hours, 3 Laboratory Hours

Continuation of CH 110 Chemistry, including solutions, oxidation-reduction, ionization and electrolysis, acids, bases and salts, chemical equilibrium, and coordination compounds.

(Prerequisite: CH 110 Chemistry)

## CH 112 Chemistry

4 Credits  
3 Class Hours, 3 Laboratory Hours

Continuation of CH 111 Chemistry, dealing primarily with qualitative analysis.

(Prerequisite: CH 111 Chemistry)

## CH 113 Chemistry

3 Credits  
3 Class Hours

An introductory course to prepare the student for the mathematical operations encountered in more advanced chemistry courses.

(Prerequisite: CH 111 Chemistry)



## CH 131 Qualitative Chemistry

5 Credits

3 Class Hours, 4 Laboratory Hours

Ionization constants, solubility products and equilibrium constants as they influence qualitative analysis. Laboratory work includes the detection and identification of the more important cations and anions, as well as work on the analysis of mixtures. Emphasis on various methods, such as flame coloration, blowpipe, bead, open and closed tube, solubility, confirmation, hand spectroscopy and light microscope.

(Prerequisite: CH 111 Chemistry)

## CH 180 Chemistry

4 Credits

3 Class Hours, 2 Laboratory Hours

For non-technical students who require knowledge of chemical principles, applications, and terminology. The laboratory work is demonstrational rather than operational.

## CH 241 Quantitative Chemistry

7 Credits

4 Class Hours, 9 Laboratory Hours

Application of physical and chemical theory to the more important gravimetric and volumetric procedures. Analytical balance, errors, precision, significant figures, and preparation of samples for analysis. Laboratory work covers the application of various methods of quantitative analysis including gravimetry, neutralimetry, precipitation, redoximetry, and compleximetry.

(Prerequisites: CH 131 Qualitative Chemistry and CH 113 Chemistry)

## CH 242 Quantitative Chemistry

5 Credits

3 Class Hours, 6 Laboratory Hours

Instrumental methods of analytical chemistry, primarily electrochemical methods. Laboratory work in potentiometry, polarography, coulometry, conductimetry, electrodeposition and radiochemistry.

(Prerequisite: CH 241 Quantitative Chemistry)

## CH 243 Instrumental Methods of Analysis

5 Credits

3 Class Hours, 6 Laboratory Hours

Instrumental methods of analytical chemistry, primarily optical methods. Laboratory work in visible, ultraviolet, and infrared spectrophotometry; flame photometry; chemical microscopy; and gas, column, and paper chromatography.

(Prerequisite: CH 242 Quantitative Chemistry)

## CH 251 Organic Chemistry

5 Credits

3 Class Hours, 6 Laboratory Hours

The important classes of carbon compounds, such as aliphatic and aromatic hydrocarbons, alcohols, alkyl and aryl halides, ethers and carboxylic acids, in terms of modern electronic and resonance theories.

(Prerequisite: CH 131 Qualitative Chemistry or CH 112 Chemistry)

## CH 252 Organic Chemistry

5 Credits

3 Class Hours, 6 Laboratory Hours

A continuation of the study of additional classes of organic compounds followed by a study of tautomerism, stereochemistry, carbohydrates, dyes and proteins, in terms of modern electronic and resonance theories.

(Prerequisite: CH 251 Organic Chemistry)

## CH 253 Organic Chemistry

5 Credits

3 Class Hours, 6 Laboratory Hours

The identification of organic compounds by correlation of fundamental properties, and the behavior of organic compounds with their structures. Preparation and properties of polymers.

(Prerequisite: CH 252 Organic Chemistry)

## CH 261 Chemical Engineering Stoichiometry

3 Credits

3 Class Hours

The application of chemistry, physics, and mathematics to the solution of chemical engineering problems. Emphasis on the solution of problems dealing with material and energy balances.

(Prerequisites: CH 113 Chemistry and MA 140 College Algebra and Trigonometry)

## CH 262 Chemical Engineering Unit Operations

4 Credits

3 Class Hours, 3 Laboratory Hours

Basic unit operations of chemical engineering, including fluid flow, heat transfer, evaporation, distillation, drying, gas absorption, and filtration. Laboratory experimentation uses pilot plant size equipment, and formal reports utilizing the students' data are required.

(Prerequisite: CH 261 Chemical Engineering Stoichiometry)

## CH 263 Chemical Engineering Unit Operations

5 Credits

3 Class Hours, 6 Laboratory Hours

A continuation of CH 262, covering distillation, drying, gas absorption, and filtration.

(Prerequisite: CH 262 Chemical Engineering Unit Operations)

## CH 265 Chemical Engineering Stoichiometry

3 Credits

3 Class Hours

A continuation of CH 261 Chemical Engineering Stoichiometry, covering the solution of more advanced material and energy problems.

(Prerequisite: CH 261 Chemical Engineering Stoichiometry)

## CH 266 Survey of Transfer Operations

4 Credits

3 Class Hours, 3 Laboratory Hours

The basic mechanisms of heat, mass, and momentum transfer, as applied to chemical engineering. Laboratory work involves demonstration and measurement of the above phenomena.

(Prerequisite: CH 265 Chemical Engineering Stoichiometry)

## CIVIL TECHNOLOGY

### CT 110 Architectural Drawing

1 Credit

3 Laboratory Hours

History of residential architecture, preliminary planning, materials.

(Prerequisite: MT 112 Descriptive Geometry)

### CT 119 Plain Concrete

3 Credit Hours

2 Class Hours, 3 Laboratory Hours

A study of cements, aggregates, and plain concrete, including the testing of cements and aggregates, the design, mixing, testing, placing, curing control and inspection of plain concrete. ASTM and AASHTO Standards.

- CT 131 Heating, Ventilating and Air Conditioning** **3 Credits**  
**3 Class Hours**
- Fundamentals of heating, ventilating and air conditioning including the theory, design, layout and installation of steam, hot water, warm air heating system and air conditioning systems.
- (Prerequisites: MA 142 Analytic Geometry and Calculus and PH 141 Physics)**
- CT 140 Surveying** **5 Credits**  
**3 Class Hours, 6 Laboratory Hours**
- Plane surveying including distance measurement, note keeping, compass surveying, leveling, angle measurement, care and use of instruments, stadia, plane table topography, traversing, coordinates, area computation, mapping.
- (Prerequisite: MA 140 College Algebra and Trigonometry)**
- CT 141 Surveying** **4 Credits**  
**2 Class Hours, 6 Laboratory Hours**
- Continuation of CT 140 Surveying, including observation of meridian, triangulation, land surveys, horizontal and vertical control, hydrographic surveying, photogrammetry.
- (Prerequisite: CT 140 Surveying)**
- CT 153 Strength of Materials** **4 Credit Hours**  
**3 Class Hours, 2 Laboratory Hours**
- The relation between stress and strain, welded and riveted joints, torsion, shear and moment in beams, stresses in beams. The laboratory work includes tests on wood, concrete, metals and plastics in accordance with ASTM testing specifications.
- (Prerequisites: MT 155 Mechanics and MA 141 Analytic Geometry and Calculus)**
- CT 211 Architectural Drawing** **1 Credit**  
**3 Laboratory Hours**
- Development of working drawings for use in residential type construction, including plot plans, floor plans, elevations, details, mechanical and electrical layouts.
- (Prerequisite: CT 110 Architectural Drawing)**
- CT 212 Architectural Drawing** **1 Credit**  
**3 Laboratory Hours**
- Sketching, perspective drawing, and an introduction to the planning of commercial-industrial type buildings.
- (Prerequisite: CT 211 Architectural Drawing)**
- CT 220 Reinforced Concrete Design** **4 Credits**  
**3 Class Hours, 3 Laboratory Hours**
- Design, investigation and detailing of basic reinforced concrete structural members. A term project is included.
- (Prerequisite: CT 254 Strength of Materials)**
- CT 221 Structural Steel Design** **4 Credits**  
**3 Class Hours, 3 Laboratory Hours**
- Design, investigation and detailing of basic structural steel members. A term project is included.
- (Prerequisite: CT 220 Reinforced Concrete Design)**



- CT 230 Building Design** **4 Credits**  
**3 Class Hours, 3 Laboratory Hours**  
Application of architectural design principles to commercial-industrial type buildings. A term project is included.  
(Prerequisite: CT 212 Architectural Drawing)
- CT 250 Estimating and Construction Planning** **4 Credits**  
**3 Class Hours, 3 Laboratory Hours**  
A systematic approach to determining the cost of a building project combined with the planning and scheduling of operation.  
(Prerequisite: CT 212 Architectural Drawing)
- CT 254 Strength of Materials** **3 Credits**  
**3 Class Hours**  
A continuation of CT 153 Strength of Materials including the design of beams and columns; bending, shearing and combined stresses; deflection of determinate and indeterminate members, energy method and selected topics.  
(Prerequisite: CT 153 Strength of Materials)
- CT 260 Hydraulics** **3 Credits**  
**3 Class Hours**  
Fundamental principles of hydraulics including properties of fluids, hydrostatics, fluid motion, flow in or through orifices, nozzles, pipes, wires, open channels. Hydraulic machinery.  
(Prerequisite: PH 142 Physics and MA 142 Mathematics)
- CT 270 Soil Mechanics** **4 Credits**  
**3 Class Hours, 3 Laboratory Hours**  
Origin and nature of soil, soil density, sampling, soil water, flow nets and seepage forces. Classification, frost action, stabilization, stress, consolidation, settlement, shearing strength, stability, embankments, dams, retaining walls, piles and underground conduits. The laboratory covers ASTM and AASHTO specifications used in classifying and predicting behavior of soils.  
(Prerequisite: CT 153 Strength of Materials)
- CT 283 Route Surveying & Highway Design** **4 Credits**  
**3 Class Hours, 3 Laboratory Hours**  
Horizontal and vertical curves, spirals, sight distances, earthwork and computer applications. Term project includes plan, profile, intersections, cross sections, areas, volumes, superelevation, mass diagram, estimate, drainage.  
(Prerequisite: CT 141 Surveying)
- CT 284 Highway Design** **4 Credits**  
**3 Class Hours, 3 Laboratory Hours**  
Highway design including administration, route location, design criteria, intersections, surfaces, pavements and bases, drainage, maintenance, inspection, testing and surveys. Term project includes bridge design and details and computer applications.  
(Prerequisite: CT 283 Route Surveying & Highway Design)

# DENTAL HYGIENE

- DH 100 Dental Hygiene and Ethics** 2 Credits  
2 Class Hours  
History of dental hygiene. Ethical practice and proper oral hygiene technique.
- DH 101 Dental Manikin Practice** 3 Credits  
1 Class Hour, 4 Laboratory Hours  
Removal of simulated deposits and accretions on the teeth of manikins by use of dental instruments stressing proper scaling and polishing techniques, toothbrushing and general mouth cleanliness.  
(Prerequisite: DH 140 Dental Anatomy)
- DH 102 Dental Manikin Practice** 3 Credits  
1 Class Hour, 4 Laboratory Hours  
A continuation of DH 101.  
(Prerequisite: DH 141 Dental Anatomy)
- DH 121 Hygiene** 2 Credits  
2 Class Hours  
The various factors (physical, social, psychological) which affect the total health status of the individual, and the effective application of sound health principles in solving health problems.
- DH 140 Dental Anatomy** 3 Credits  
2 Class Hours, 2 Laboratory Hours  
Nomenclature, arrangement, structure of the human dentition and surrounding tissues. Drawing of the permanent teeth according to scale.
- DH 141 Dental Anatomy** 3 Credits  
2 Class Hours, 2 Laboratory Hours  
Growth, development, and function of the teeth. Carving wax models of the permanent teeth.  
(Prerequisite: DH 140 Dental Anatomy)
- DH 153 Radiology** 3 Credits  
3 Class Hours  
Proper use of dental X-ray equipment. Exposure, development and mounting of dental films.  
(Prerequisites: DH 101 Dental Manikin Practice and DH 141 Dental Anatomy)
- DH 158 Dental Office Practice** 3 Credits  
2 Class Hours, 2 Laboratory Hours  
Preparation for practical office assistance, covering all phases of the functioning of a dental office. Personality training, reception of patients, use of telephone, typing, caring of dental equipment and instruments, inventory and ordering of supplies, recall system, billing, filing.  
(Prerequisite: BU 161 Typewriting or equivalent)

- DH 204 Clinical Dental Hygiene** 4 Credits  
12 Laboratory Hours
- Dental prophylaxes performed on patients, mouth inspection, topical application of fluorides, home care instruction to the patient. Practice in dental assisting, sterilizing techniques. Taking, processing and mounting radiographs. Classroom instruction in dental health education to elementary and secondary school students  
(Prerequisites: DH 102 Dental Manikin Practice, BI 172 Gross Anatomy & Physiology and DH 141 Dental Anatomy)
- DH 205 Clinical Dental Hygiene** 4 Credits  
12 Laboratory Hours
- A continuation of DH 204 Clinical Dental Hygiene.  
(Prerequisite: DH 204 Clinical Dental Hygiene)
- DH 206 Clinical Dental Hygiene** 4 Credits  
12 Laboratory Hours
- A continuation of DH 205 Clinical Dental Hygiene.  
(Prerequisite: DH 205 Clinical Dental Hygiene)
- DH 244 Preventive Dentistry** 4 Credits  
4 Class Hours
- Preventive methods for maintaining the health of the mouth and control of dental caries. Detailed studies of the latest methods of caries control through laboratory tests, diet and fluoridation. Study of teeth not in normal occlusion, classification and probable factors causing orthodontic conditions. Introduction to abnormal oral conditions found in children, with possible methods of treatment or correction.  
(Prerequisite: BI 175 Histology & Embryology)
- DH 254 General Pathology** 2 Credits  
2 Class Hours
- A broad picture of the disease process through a study of common general diseases, their causes, results, treatment. Emphasis on the principles of inflammation, healing, and repair.  
(Prerequisites: BI 159 Microbiology and BI 175 Histology & Embryology and BI 172 Gross Anatomy & Physiology)
- DH 255 Oral Pathology** 2 Credits  
2 Class Hours
- Oral diseases, their causes, recognition and treatment, with particular emphasis on the application of the principles covered in DH 254 General Pathology.  
(Prerequisite: DH 254 General Pathology)
- DH 260 Dental Laboratory Practice** 3 Credits  
2 Class Hours, 2 Laboratory Hours
- An introduction to the restorative phase of dentistry. Dental laboratory procedures by lectures, demonstrations and actual processing of laboratory projects by students. History, characteristics and use of various dental laboratory materials.
- DH 261 Nutrition** 3 Credits  
3 Class Hours
- Principles of nutrition, roles and sources of various food groups, variables that influence nutritional needs.  
(Prerequisites: CH 102 Chemistry and BI 172 Gross Anatomy & Physiology)



## DH 264 School Organization

3 Credits  
3 Class Hours

The elementary and secondary school program in terms of organization, administration, finance, personnel, school laws and regulations, teacher organization and their interrelationships and implications.

## DH 267 Anesthesia

2 Credits  
2 Class Hours

Principles of general and local anesthetics and patient management.

## DH 268 Special Dental Practices

3 Credits  
2 Class Hours, 2 Laboratory Hours

Various specialty practices in dentistry: periodontia, prosthetics, orthodontics, endodontics, exodontics, oral surgery and maxio-facial surgery. Nature, procedure, differences in types of practices and the role of the dental hygienist in each practice.

## DH 283 Dental Health Education

3 Credits  
2 Class Hours, 2 Laboratory Hours

The role of dental health in society. Review of preventive dentistry measures and their use in individual and group instruction. Study and preparation of instructional aids and source materials for dental health education.

## DH 285 Health Services in Schools

3 Credits  
3 Class Hours

The place and function of health services in public education; laws and regulations which apply to health services in schools; factors which influence the health status of the child in the school environment; the coordination of school and community health services.

# ELECTRICAL TECHNOLOGY

## ET 101 Manufacturing Processes

2 Credits  
1 Class Hour, 3 Laboratory Hours

Manufacturing processes related to the electrical industry to provide a basic knowledge in bench operations and tool operations involving the use of the lathe, drill press, vertical end mill, band saw, engraving machine, and power hacksaw. Practice and study of oxyacetylene and arc welding.

## ET 102 Electrical Construction and Maintenance

2 Credits  
1 Class Hour, 3 Laboratory Hours

General trade practices to promote acquisition of basic manipulative skills. Installation and maintenance of electrical equipment. Different types of wiring systems used in industry and homes; trouble-shooting and repair of electrical equipment. Study and practice of fabrication methods used in the electrical industry, National Electrical Code rules and shop safety practices.

## ET 103 Electrical Construction and Maintenance

1 Credit  
3 Laboratory Hours

Continuation of ET 102 Electrical Construction and Maintenance.

ET 104 Industrial Safety and First Aid 2 Credits

2 Class Hours

Accident sources and causes, safety as a responsibility of workers and management, job safety analysis. Education, training, supervision, and organization for safety. Accident reports and records. Principles of first aid.

ET 110 Physics (Fundamentals for Electricity) 5 Credits

4 Class Hours, 3 Laboratory Hours

Dimensional, vector, and graphical analysis of basic physical concepts, establishing a foundation for the study of electrical principles.

ET 111 Physics (Electricity and Magnetism) 5 Credits

4 Class Hours, 3 Laboratory Hours

Parameters and components of electrical circuits founded upon electric and magnetic field concepts.

(Prerequisite: ET 110 Physics)

ET 112 Semiconductor Fundamentals 4 Credits

4 Class Hours

Investigation of electrical phenomena within solids, based upon extra-nuclear atomic structure and concepts of solid state physics.

(Prerequisite: ET 111 Physics)

ET 120 Electrical Circuits 5 Credits

4 Class Hours, 3 Laboratory Hours

Application of circuit parameters to single and polyphase circuits, involving the use of vector algebra and elementary circuit laws.

(Prerequisite: ET 111 Physics)

ET 125 Electrical Circuits 4 Credits

3 Class Hours, 3 Laboratory Hours

Basic principles of electrical circuits including Kirchhoff's Laws, AC networks, network theorems. Sine wave voltage and current relationships, using vector representation, resonance, loci analysis, and transients. Laboratory work consists of verification of network laws and theorems.

(Prerequisite: PH 270 Physics)

ET 126 Electrical Circuits 4 Credits

3 Class Hours, 3 Laboratory Hours

Linear systems, lumped element electrical systems, equivalent circuits, analogous systems, and polyphase systems (balanced and unbalanced).

(Prerequisite: ET 125 Electrical Circuits)

ET 127 Electricity 4 Credits

3 Class Hours, 3 Laboratory Hours

The beginning of a two-term sequential course of applied electrical concepts emphasizing DC and AC circuitry and an introduction to electrical machinery.

(Prerequisite: PH 142 Physics)

- ET 128 Electricity** **4 Credits**  
**3 Class Hours, 3 Laboratory Hours**  
 A continuation of ET 127 Electricity.  
**(Prerequisite: ET 127 Electricity)**
- ET 129 Electronics** **4 Credits**  
**3 Class Hours, 3 Laboratory Hours**  
 An applied electronics course with related laboratory experiments. An introduction to the theory and operation of electronic components, with emphasis on their applications.  
**(Prerequisite: ET 128 Electricity)**
- ET 130 Engineering Drawing** **1 Credit**  
**3 Laboratory Hours**  
 Techniques of geometric construction, principles of orthographic projection, sections, theory and application of dimensioning and tolerancing. Lettering practice and development of technical sketching.
- ET 131** **1 Credit**  
**3 Laboratory Hours**  
 Discussions of shop processes and procedures to facilitate the understanding of drafting problems. Types and representation of threads, bolts, nuts, keys, keyways, and locking devices. Preparation of assembly drawings. Applications of auxiliary views and of axonometric projection. Methods of reproducing drawings.  
**(Prerequisite: ET 130 Engineering Drawing)**
- ET 132 Engineering Drawing** **1 Credit**  
**3 Laboratory Hours**  
 Solutions of mathematical problems using graphical methods. Development of scale layout and construction of various common forms of nomographs. Geometric derivations of various types of mathematical relationships.  
**(Prerequisite: ET 131 Engineering Drawing)**
- ET 223 Network Analysis** **4 Credits**  
**4 Class Hours**  
 Analysis of complex electrical networks by the application of Kirchhoff's Laws, Thevenin's theorem, Norton's theorem, superposition, and vector loci methods.  
**(Prerequisite: ET 241 Electrical Circuits)**
- ET 230 Electrical Design** **1 Credit**  
**3 Laboratory Hours**  
 Application of electrical drafting principles to the planning of power layout and lighting design. Manufacturers' catalogs, charts, and the National Electric Code form essential reference material. Lists of materials and schedules are prepared as parts of each project.  
**(Prerequisite: ET 132 Engineering Drawing)**
- ET 231 Electrical Design** **1 Credit**  
**3 Laboratory Hours**  
 Electrical drafting in the field of electronics. A study of symbols, conventions, layout procedures, and circuit sequence that comprises an electronic circuit. Individual student projects.  
**(Prerequisite: ET 230 Electrical Design)**



- ET 232 Electrical Design** **1 Credit**  
**3 Laboratory Hours**
- Circuit symbols and types of diagrams used in control mechanisms. Discussions of the principles of control devices, their construction, and operation. Individual student projects.
- (Prerequisite: ET 231 Electrical Design)**
- 
- ET 240 Electrical Machines** **5 Credits**  
**4 Class Hours, 3 Laboratory Hours**
- Theory, operation, and application of DC machinery. Introduction to single and polyphase transformers, their design, characteristics, and applications. Use of vector diagrams. Class work related to laboratory experience.
- (Prerequisite: ET 120 Electrical Circuits)**
- 
- ET 241 Electrical Machines** **5 Credits**  
**4 Class Hours, 3 Laboratory Hours**
- Continuation of the work on transformers with attention to special connectors. Alternators, synchronous motors, induction motors. Theory of design, construction, characteristics, and applications. Laboratory work dealing with several methods of evaluation. Special methods of predicting characteristics, including vector and circle diagram methods.
- (Prerequisite: ET 240 Electrical Machines)**
- 
- ET 242 Automatic Controls** **5 Credits**  
**4 Class Hours, 3 Laboratory Hours**
- Theory, operation, and application of industrial equipment used in the automatic control of industrial motors and generators. Examination, operation, and troubleshooting of these control devices. Introduction to the principles of servo-mechanisms.
- (Prerequisite: ET 241 Electrical Machines)**
- 
- ET 250 Electronics** **5 Credits**  
**4 Class Hours, 3 Laboratory Hours**
- Introduction to electronic building blocks. Characteristics of vacuum, gas, and semiconductor devices. Multi-element and special types of active devices.
- (Prerequisites: MA 141 Mathematics and ET 112 Physics)**
- 
- ET 251 Electronics** **5 Credits**  
**4 Class Hours, 3 Laboratory Hours**
- Use of electronic building blocks. Vacuum, gas, and semiconductor devices in functioning circuitry. Prediction and analysis of performance.
- (Prerequisite: ET 123 Electronics)**
- 
- ET 252 Electronics** **5 Credits**  
**4 Class Hours, 3 Laboratory Hours**
- Behavior of large signal devices, graphical analysis, application of feedback, sinusoidal oscillators.
- (Prerequisites: MA 142 Mathematics and ET 251 Electronics)**

## ET 253 Electronics

5 Credits

4 Class Hours, 3 Laboratory Hours

Cascaded circuits. Behavior and applications of non-linear circuits, circuits with heavy feedback, wave shaping, non-sinusoidal oscillators, counters, functional devices.

(Prerequisite: ET 252 Electronics)

## ET 261 Industrial Organization

3 Credits

3 Class Hours

Principles, functions, and coordination of industrial organization. Management, costs, product development, marketing, methods analysis, work measurement, plant layout, material handling, production, and inventory control.

## ET 262 Industrial Relations

3 Credits

3 Class Hours

Analysis and study of the principles, concepts, and techniques of industrial relations. Emphasis on the personnel function as an important area of industrial relations. Guidance and counsel to students in finding and selecting suitable employment as well as long-range vocational goals in Electrical Technology.

## ET 263 Engineering Economics

3 Credits

3 Class Hours

A fundamental course in engineering economics for Electrical Technology students. Component selection and purchase, equipment maintenance, and comparison of various plant operations. Engineering depreciation calculation and minimum cost analysis and estimates in economy analysis and classifications of engineering cost.

# GENERAL EDUCATION

These courses are primarily offered to provide a broad survey of the social studies and humanities for students enrolled in technical studies.

## GE 101 English

3 Credits

3 Class Hours

Introduction to the nature and history of language. Semantics. Levels of usage. The construction of effective sentences and paragraphs. Critical reading of related essays.

## GE 102 English

3 Credits

3 Class Hours

Instruction and practice in the different types of writing including informative, evaluative, and persuasive. Style, tone, and diction, and their relationship to the writer's purpose. Critical reading of related essays.

(Prerequisite: GE 101 English)

## GE 103 English

3 Credits

3 Class Hours

The reading of prose selections dealing philosophically with man and his views of the world. Development of analytical reading, critical thinking, and effective communication.

(Prerequisite: GE 102 English)

- GE 104 Effective Speaking** **3 Credits**  
**3 Class Hours**
- Speech communication through voice, words, and action. Voice production, diction, platform presence. Organization of ideas. Practice in presenting speeches of different types.
- GE 105 American Literature** **3 Credits**  
**3 Class Hours**
- American Literature during the most recent times as seen through the reading of selected pieces of both prose and poetry by such writers as Poe, Melville, Miller, Steinbeck and others. Emphasis on the emergence of ideas relative to our time and society.
- GE 110 Psychology** **3 Credits**  
**3 Class Hours**
- Principles of psychology as they relate to the problems of human behavior. Emphasis on perception, intelligence, learning, memory, motivation, personality, psychological measurement, problems of adjustment.
- GE 120 Economics** **3 Credits**  
**3 Class Hours**
- Economic facts and principles and their application to the American society. Production, consumption, forms of business ownership, national income, money and credit, banking, taxation, social security. Labor-management relations, business cycles, international trade, comparison of capitalism with other economic systems.
- GE 130 Sociology** **3 Credits**  
**3 Class Hours**
- Human groups, their activities, interrelationships, forces influencing them, and the influence of groups upon individuals and society. Emphasis on the foundations of society, our cultural environment, the family, education, religion, the growth of the individual within the social framework, the aged in modern society, social progress.
- GE 140 Introduction to Philosophy** **3 Credits**  
**3 Class Hours**
- The basic problems of philosophy, such as the nature of truth, origin and development of life, idealism, naturalism, ethics, freedom, the natural and the supernatural.
- GE 143 Ethics** **3 Credits**  
**3 Class Hours**
- Basic and related standards of conduct and moral judgment, emphasizing both classical and contemporary views.
- GE 144 Logic** **3 Credits**  
**3 Class Hours**
- Logical methods of thought and analysis. Emphasis on fallacies, deduction, induction, and subjective factors in sound thinking.
- GE 150 Political Science** **3 Credits**  
**3 Class Hours**
- Functions of American government. Organization, foreign policy, problems of labor and business, forces at work within our democracy. Political roots, individual rights, pressure groups, party systems, and bureaucracy.



GE 160 The Language of Music 3 Credits

3 Class Hours

The essentials of musical knowledge needed to understand all forms of music through a study of rudiments, harmony, style, form and a survey of music literature. Emphasis upon developing good listening habits and an awareness of the art of music.

GE 161 Music in the Baroque and Classic Era 3 Credits

3 Class Hours

Music and musical styles of the 17th and 18th centuries. Emphasis upon the composers and their styles and the relationship of music to the social, political and other cultural reforms of the period.

(Prerequisite: GE 160 The Language of Music or consent of instructor)

GE 162 19th Century Romanticism 3 Credits

3 Class Hours

Important musicians and musical styles of the Romantic Period. Emphasis upon the developments in piano literature, the symphony orchestra, and opera. Listening to selected recordings and attendance at local concerts form an integral part of the discussions.

(Prerequisite: GE 160 The Language of Music or Consent of Instructor)

GE 163 Introduction to Contemporary Music 3 Credits

3 Class Hours

Important musicians and musical styles in the 20th century. Emphasis upon the trends and development of music in America as well as a study of leading European composers.

(Prerequisite: GE 160 The Language of Music or Consent of instructor)

## LIBERAL ARTS

LA 101, 102, 103 Beginning Spanish 3 Credits

3 Class Hours, 1 Laboratory Hour

Basic principles of grammar and syntax. Emphasis on oral practice in classroom, supplemented by work in audio-lingual laboratory. Reading of graded literary and cultural texts.

(Prerequisite: Spanish LA 101 or equivalent for LA 102  
Spanish LA 102 or equivalent for LA 103)

LA 110, 111, 112 Beginning French 3 Credits

3 Class Hours, 1 Laboratory Hour

Basic principles of grammar and syntax. Emphasis on oral practice in classroom, supplemented by work in audio-lingual laboratory. Reading of graded literary texts.

(Prerequisite: French LA 110 or equivalent for LA 111  
French LA 111 or equivalent for LA 112)

LA 119, 120, 121, Beginning German 3 Credits

3 Class Hours, 1 Laboratory Hour

Basic principles of grammar and syntax. Emphasis on oral practice in classroom, supplemented by work in audio-lingual laboratory. Reading of graded literary texts.

(Prerequisite: German LA 119 or equivalent for LA 120  
German LA 120 or equivalent for LA 121)

- LA 130 English Composition** **3 Credits**  
**3 Class Hours**
- Introduction to the nature and history of language. Instruction and practice in the writing of short, expository compositions. The tools and techniques of the research paper.
- LA 131 English Composition** **3 Credits**  
**3 Class Hours**
- Continued expository theme writing. Instruction and practice in argumentation, description, and narration. Study of tone and other aspects of style through analysis of selected essays
- (Prerequisite: LA 130 English or equivalent)**
- LA 132 English Composition** **3 Credits**  
**3 Class Hours**
- Critical and evaluative writing based on ideas suggested by the study of selected pieces of literature.
- (Prerequisite: LA 131 English or equivalent)**
- LA 145 Development of Western Civilization** **3 Credits**  
**3 Class Hours**
- The development of man from the dawn of history, through the classical civilizations of Greece and Rome, to the Middle Ages and the Renaissance.
- LA 146 Development of Western Civilization** **3 Credits**  
**3 Class Hours**
- The Reformation, the emergence of modern Europe, humanism, exploration and invention, the Age of Enlightenment, colonialism, and the Age of Revolutions.
- LA 147 Development of Western Civilization** **3 Credits**  
**3 Class Hours**
- The period from the close of the Napoleonic Period to the present: development of nationalism, the beginning of liberalism, the growth of industrialism, the two World Wars, and present-day tensions. Social and cultural trends of the period.
- LA 155 Economics** **3 Credits**  
**3 Class Hours**
- Introduction to the American economy. Foundations of economic progress, free private enterprise in the United States, money and the banking system, economic growth in America, business fluctuations, monetary and fiscal policies, practical problems of stabilization policy.
- LA 156 Economics** **3 Credits**  
**3 Class Hours**
- Business enterprise in our economy, role of the consumer, monopoly, monopolistic competition, government and business, distribution of income, labor unionism and collective bargaining, government and labor.
- (Prerequisite: LA 155 Economics or equivalent)**

**LA 157 Economics**

**3 Credits**

**3 Class Hours**

Property incomes, profits, wage-price policy and the role of government, public finance. International trade, financing international transactions, international monetary and fiscal policy. Social security in the United States, the underdeveloped countries, comparative economic systems.

**(Prerequisite: LA 156 Economics or equivalent)**

**LA 186 Psychology**

**3 Credits**

**3 Class Hours**

Fundamentals of anatomy and physiology underlying human and animal behavior: senses, receptors, effectors, nerve action, nervous systems, the brain.

**LA 187 Psychology**

**3 Credits**

**3 Class Hours**

Psychological mechanisms of behavior: learning, memory, problem-solving, thinking.

**(Prerequisite: LA 186 Psychology or equivalent)**

**LA 188 Psychology**

**3 Credits**

**3 Class Hours**

The individual related to his external environment: perception, attending, individual differences, intelligence, motivation, conflict.

**(Prerequisite: LA 187 Psychology or equivalent)**

**LA 193 Philosophy**

**3 Credits**

**3 Class Hours**

Methodology, the principles of deductive and inductive logic, and the history of philosophy.

**LA 194 Philosophy**

**3 Credits**

**3 Class Hours**

The various systems of thought, including idealism, rationalism, theism, empiricism, positivism, pragmatism, scepticism, and existentialism.

**(Prerequisite: LA 193 Philosophy or equivalent)**

**LA 195 Philosophy**

**3 Credits**

**3 Class Hours**

Ethics: moral values, rules of conduct, and guides to action. Aesthetics: the science of beauty, the rules and principles of art.

**(Prerequisite: LA 194 Philosophy or equivalent)**

**LA 204 Intermediate Spanish**

**3 Credits**

**3 Class Hours, 1 Laboratory Hour**

Reading and discussion of cultural and historical texts. Continuation of grammar, syntax, and oral practice in classroom and audio-lingual laboratory.

**(Prerequisite: LA 103 Spanish or equivalent)**

**LA 205 Intermediate Spanish**

**3 Credits**

**3 Class Hours, 1 Laboratory Hour**

Intensive and extensive reading of literary works of recognized authors. Continuation of grammar, syntax, and oral practices in classroom and audio-lingual laboratory.

**(Prerequisite: LA 204 Spanish or equivalent)**



- LA 206 Intermediate Spanish 3 Credits**  
**3 Class Hours, 1 Laboratory Hour**  
 Emphasis on composition, with continuation of grammar, syntax, and oral practices in classroom and audio-lingual laboratory.  
 (Prerequisite: LA 205 Spanish or equivalent)
- LA 213 Intermediate French 3 Credits**  
**3 Class Hours, 1 Laboratory Hour**  
 Reading and discussion of cultural and historical texts. Continuation of grammar, syntax, and oral practices in classroom and audio-lingual laboratory.  
 (Prerequisite: LA 112 French or equivalent)
- LA 214 Intermediate French 3 Credits**  
**3 Class Hours, 1 Laboratory Hour**  
 Intensive and extensive reading of literary works of recognized authors. Continuation of grammar, syntax, and oral practices in classroom and audio-lingual laboratory.  
 (Prerequisite: LA 213 French or equivalent)
- LA 215 Intermediate French 3 Credits**  
**3 Class Hours, 1 Laboratory Hour**  
 Emphasis on composition, with continuation of grammar, syntax, and oral practices in the classroom and audio-lingual laboratory.  
 (Prerequisite: LA 214 French or equivalent)
- LA 216 French Conversation and Composition 3 Credits**  
**3 Class Hours, 1 Laboratory Hour**  
 Practice in oral and written French. Special attention to French phonetics and modern French idiom. Use of audio-lingual laboratory.  
 (Prerequisite: LA 215 Intermediate French or equivalent)
- LA 217 Introduction to French Literature 3 Credits**  
**3 Class Hours, 1 Laboratory Hour**  
 Reading, lectures, and reports on masterpieces of French literature with cultural and historical implications, from *La Chanson de Roland* through the eighteenth century. Use of audio-lingual laboratory to hear recordings of masterpieces.  
 (Prerequisite: LA 216 French Conversation and Composition or equivalent)
- LA 218 Introduction to French Literature 3 Credits**  
**3 Class Hours, 1 Laboratory Hour**  
 Further reading, lectures, reports on masterpieces of French literature with their implications, from the eighteenth century to modern times. Use of audio-lingual laboratory to hear recordings of masterpieces.  
 (Prerequisite: LA 217 Introduction to French Literature or equivalent)
- LA 222 Intermediate German 3 Credits**  
**3 Class Hours, 1 Laboratory Hour**  
 Emphasis on grammar with difficult problems of syntax and translation. Conversation with audio-lingual laboratory work.  
 (Prerequisite: LA 121 German or equivalent)

- LA 223 Intermediate German** **3 Credits**  
**3 Class Hours, 1 Laboratory Hour**  
Further drill in grammar and composition. Conversation with audio-lingual laboratory work. Introduction to original texts of standard authors.  
(Prerequisite: LA 222 Intermediate German or equivalent)
- LA 224 Intermediate German** **3 Credits**  
**3 Class Hours, 1 Laboratory Hour**  
Reading and discussion of original texts of standard authors with cultural and historical implications. Use of audio-lingual laboratory to hear recordings of masterpieces.  
(Prerequisite: LA 223 Intermediate German or equivalent)
- LA 225 German Conversation and Composition** **3 Credits**  
**3 Class Hours, 1 Laboratory Hour**  
Practice in oral and written German, exercise in dictation, letter writing, and composition. Special attention to modern German idiom. Use of audio-lingual laboratory.  
(Prerequisite: LA 224 German or equivalent)
- LA 226 Survey of German Literature** **3 Credits**  
**3 Class Hours, 1 Laboratory Hour**  
Readings and lectures in German literature from the Old High German period to the 18th century. Lectures and reports. Use of audio-lingual laboratory to hear recordings of masterpieces.  
(Prerequisite: LA 225 German or equivalent)
- LA 227 Survey of German Literature** **3 Credits**  
**3 Class Hours, 1 Laboratory Hour**  
Further readings and lectures in German literature with emphasis on great masters from the 18th century to modern times.  
(Prerequisite: LA 226 German or equivalent)
- LA 233 English Literature** **3 Credits**  
**3 Class Hours**  
The history and development of the English novel as a literary form. Reading and discussion of representative English novels from Fielding's *Joseph Andrews* to Conrad's *Lord Jim* with attention to both themes and structure.  
(Prerequisite: LA 132 English Composition or equivalent)
- LA 234 English Literature** **3 Credits**  
**3 Class Hours**  
English dramatic literature from the Middle Ages to 1900. Emphasis on dramatic techniques and the historical, social and intellectual climate of the time.
- LA 235 English Literature** **3 Credits**  
**3 Class Hours**  
English non-dramatic poetry from Chaucer to Eliot. Metrics and versification. Analysis of sounds, words, symbols, images, metaphors, and tone in selected poems of various forms and types.

**LA 236 World Literature 3 Credits**

**3 Class Hours**

Reading and analysis of important works of literature of the Western world from classical antiquity to the modern day. Authors included are Homer, Sophocles, Virgil, Dante, Swift, Cervantes, Voltaire, Dostoevski, and Faulkner.

**LA 237 English Literature of the 17th Century 3 Credits**

**3 Class Hours**

Non-dramatic English literature of the seventeenth century surveyed in its relationship to the scientific, political, and religious life of the era. Emphasis on major writers exclusive of Milton.

**LA 238 Modern American Drama 3 Credits**

**3 Class Hours**

Dramatic literature in America from O'Neill to Williams, Miller, Hellman, Inge, Thurber, Anderson and others. Emphasis on the revitalization of old dramatic forms and experimentation with new ones.

**LA 248 History of Latin America 3 Credits**

**3 Class Hours**

Pre-Columbian Latin America, the Spanish and Portuguese conquests, and the Colonial Period.

**LA 249 History of Latin America 3 Credits**

**3 Class Hours**

Latin America's wars of independence and the economic and cultural development of the nineteenth century.

**LA 250 History of Latin America 3 Credits**

**3 Class Hours**

The major Latin American nations in the twentieth century in terms of political, economic, and social institutions and problems.

**LA 280 Sociology 3 Credits**

**3 Class Hours**

Sociological facts and principles dealing with the scientific study of human relationships. Emphasis on analysis and study of culture and human society, socialization, groups, and group structures.

**LA 281 Sociology 3 Credits**

**3 Class Hours**

Stratification, collective behavior patterns, and the various social institutions including associations, the family, and education. The application of sociological principles relating to the agents of social change.

**(Prerequisite: LA 280 Sociology or its equivalent)**

**LA 282 Sociology 3 Credits**

**3 Class Hours**

The structure of the aggregates of population, minority groupings, crime and delinquency, and major changes in technology, urbanism, and political structures as they relate to man.

**(Prerequisite: LA 281 Sociology or its equivalent)**



# MATHEMATICS

## MA 101 Mathematics

3 Credits

3 Class Hours

Algebra and trigonometry for Business students. Includes the number system, linear and fractional equations, exponents and radicals, functions and graphs, trigonometric functions, quadratic equations, logarithms.

(Prerequisite: 1 unit algebra)

## MA 104 Mathematics of Finance

3 Credits

3 Class Hours

An application of mathematics to the business world. Fundamental mathematical theory is applied to typical situations in accounting, marketing, business administration, investments and life insurance problems.

(Prerequisite: MA 111 College Algebra)

## MA 110 College Algebra

3 Credits

3 Class Hours

Real numbers, fundamental operations of algebra, factoring, fractions, linear equations in one unknown, systems of linear equations, exponents and radicals, quadratic equations in one and two unknowns, variation, ratio and proportion, progressions, binomial theorem, inequalities.

## MA 111 College Algebra

3 Credits

3 Class Hours

A continuation of MA 110 College Algebra. Theory of equations, permutations and combinations, probability, infinite series, partial fractions.

(Prerequisite: MA 110 College Algebra)

## MA 112 College Trigonometry

3 Credits

3 Class Hours

The trigonometric functions, natural and logarithmic solution of right and oblique triangles, fundamental identities, trigonometric reductions. Angular measure, variation and graphs of the trigonometric functions, functions of a composite angle, logarithms, trigonometric equations, the inverse functions. Complex numbers, the versed functions, Molleweide's equations, and logarithms to bases other than ten.

(Prerequisite: MA 111 College Algebra)

## MA 130 Modern Algebra

3 Credits

3 Class Hours

Set theory, mappings, classification of the complex number system, integral domains, equivalence relations, equivalence classes, linear congruences, and groups.

## MA 131 Modern Algebra

3 Credits

3 Class Hours

Group theory, groupoids, quasi-groups, loops, semi-groups, cyclic groups, isomorphisms, cosets, invariant subgroups, and quotient groups.

(Prerequisite: MA 130 Modern Algebra)

## MA 132 Modern Algebra

3 Credits

3 Class Hours

Automorphisms, homomorphisms, field, rings, ideals, residue class rings, matrix theory, determinants, and vector spaces.

(Prerequisite: MA 131 Modern Algebra)

## MA 140 College Algebra and Trigonometry

4 Credits

4 Class Hours

Topics in algebra and trigonometry necessary in technical courses: solutions of algebraic and exponential equations, logarithms, determinants, quadratic equations, trigonometric functions, trigonometric equations, oblique triangles, complex numbers, and inequalities.

## MA 141 Analytic Geometry and Calculus

3 Credits

3 Class Hours

Rectangular coordinates in a plane, the straight line, slope and inclination, equations of curves, discussion of a curve, functions and limits, indeterminate forms, continuity, the derivative, differentiation of algebraic functions.

(Prerequisite: MA 140 College Algebra and Trigonometry)

## MA 142 Analytic Geometry and Calculus

3 Credits

3 Class Hours

Applications of derivatives, maxima and minima, differentials, indefinite integral, definite integral, applications of definite integral. Area between curves, volumes by cylindrical washers and shells, lengths of plane curve, centroid and second moment of area, moment of inertia.

(Prerequisite: MA 141 Analytic Geometry and Calculus)

## MA 160 Analytic Geometry and Calculus

4 Credits

4 Class Hours

Rectangular coordinates in a plane, equations and loci, the straight line, discussion of the equation of a locus, functions and limits, continuity, derivative of a function, differentiation of algebraic functions. Explicit and implicit differentiation, inverse functions, successive differentiation, tangents and normals to plane curves, acceleration, maxima and minima of functions of one variable, inflection points.

## MA 161 Analytic Geometry and Calculus

4 Credits

4 Class Hours

Differentials, Rolle's theorem, mean value theorem, indefinite and definite integral, area under a curve, work done by a variable force. Fundamental theorem of integral calculus, mean-value theorem for integrals, plane areas, volume by cylindrical disks and cylindrical shells, lengths of curve, centroid of area, centroid of solid, moment of inertia. The conics, trigonometric functions, inverse trigonometric functions, exponential functions, logarithmic functions, hyperbolic functions.

(Prerequisite: MA 160 Analytic Geometry & Calculus)

## MA 162 Analytic Geometry and Calculus

4 Credits

4 Class Hours

Polar coordinates, parametric equations, curvilinear motion, curvature of plane curves. Integration by standard forms, by parts, and by trigonometric substitution. Partial fractions, reduction formulas, table of integrals, applications of definite inte-

grals. Plane areas, volumes, length of curve, surface area, centroids, approximate integration, improper integrals, indeterminate forms.

**(Prerequisite: MA 161 Analytic Geometry & Calculus)**

**MA 170    Analytic Geometry and Calculus** **4 Credits**  
**4 Class Hours**

Rectangular coordinates in a plane, slope of a line, functions and graphs, derivative of a function, applications of the derivative in curve plotting. Indefinite integral, differentiation and integration of trigonometric functions, fundamental theorem of integral calculus, trapezoidal rule, applications of the definite integral. (Emphasis on engineering sciences).

**MA 171    Analytic Geometry and Calculus** **4 Credits**  
**4 Class Hours**

Transcendental functions. Methods of integration: partial fractions, integration by parts, substitution. Improper integrals, determinants, plane analytic geometry, Newton's method for approximating roots, the conics, hyperbolic functions. (Emphasis on engineering sciences).

**(Prerequisite: MA 170 Analytic Geometry & Calculus)**

**MA 172    Analytic Geometry and Calculus** **4 Credits**  
**4 Class Hours**

Polar coordinates, graphs of polar equations, conic sections, angle between radius vector and tangent line, plane areas. Vectors and parametric equations,  $i$  and  $j$  unit vectors, differentiation of vectors, curvature, solid geometry. Vectors, scalar and dot products, quadric surfaces. (Emphasis on engineering sciences).

**(Prerequisite: MA 171 Analytic Geometry & Calculus)**

**MA 240    Analytic Geometry and Calculus** **3 Credits**  
**3 Class Hours**

The conic sections, general and standard equations of conics, transformation of coordinates, differentiation of transcendental functions. Hyperbolic functions, polar coordinates, parametric equations, velocity and acceleration in curvilinear motion, curvature of plane curves.

**(Prerequisite: MA 142 Analytic Geometry and Calculus  
and permission of student's department chairman)**

**MA 241    Analytic Geometry and Calculus** **3 Credits**  
**3 Class Hours**

Integration by standard forms, integration by parts, trigonometric substitution, partial fractions, use of table of integrals, applications of definite integrals. Trapezoidal and parabolic approximation, improper integrals, indeterminate forms, infinite series, expansion of functions in series.

**(Prerequisite: MA 240 Analytic Geometry & Calculus)**

**MA 260    Analytic Geometry and Calculus** **3 Credits**  
**3 Class Hours**

Infinite series, Taylor's and MacLaurin's series, calculation of logarithms, solid analytic geometry, partial derivatives, multiple integrals.

**(Prerequisite: MA 162 Analytic Geometry & Calculus)**



## MA 261 Differential Equations

3 Credits  
3 Class Hours

The differential equation existence theorems, variable separable. Homogeneous, exact differential, linear, and Bernoulli equations. Geometric applications, heat flow, first and second order processes. Non-homogeneous equations, linear equations of higher order, methods of undetermined coefficients and variation of parameters, solutions and theorems by operators, dynamic applications. Digital computer applications.

(Prerequisite: MA 260 Calculus)

## MA 262 Differential Equations

3 Credits  
3 Class Hours

Numerical methods of solution, Taylor's series, Runge-Kutta method, Adams' and Milne's methods. Special differential equations of the second order, first order differential equations of higher degree than the first, the Clairaut equation. Series solution, the method of Frobenius, Legendre's and Bessel's equations. Partial differential equations, method of Lagrange-Charpit, Cauchy's problem.

(Prerequisite: MA 261 Differential Equations)

## MA 270 Analytic Geometry and Calculus

3 Credits  
3 Class Hours

Partial derivatives, total differential, maximum and minimum of functions of two or more variables, exact differentials, line integrals. Multiple integrals, area, volume, spherical coordinates, cylindrical coordinates, surface area. Infinite series: power series, Taylor's theorem, Fourier series, convergence of power series, alternating series, tests for convergence. (Emphasis on engineering sciences).

(Prerequisite: MA 172 Analytic Geometry & Calculus)

## MA 271 Differential Equations

3 Credits  
3 Class Hours

The differential equation, hyperbolic functions. Differential equations of the first order, separable equations, particular solutions, dynamics, chemical reactions. Integrable combinations, homogeneous equations, equivalence of solutions, linear equations, electric circuits, Bernoulli's equation, orthogonal trajectories. Linear equation with constant coefficients, rectilinear motion, deflection of beams, undetermined coefficients, variation of parameter, forced vibration and electric circuits. Applications on the Heath analog and IBM 1620 computers. (Emphasis on engineering sciences).

(Prerequisite: MA 270 Analytic Geometry and Calculus)

## MA 272 Differential Equations

3 Credits  
3 Class Hours

Special higher order equations: reducible to linear with constant coefficients, dependent or independent variable missing. Simultaneous equations, systems of linear equations, roots of unity, linear equation of second order. Exact, Riccati and adjoint equations. Series solutions: power series, Frobenius series. Partial differential equations, partial derivatives, separation of variables, vibrating string. Applications on the analog and the IBM 1620 digital computer. (Emphasis on engineering sciences).

(Prerequisite: MA 271 Differential Equations)

## MA 273 LaPlace Transforms

3 Credits

3 Class Hours

Application of LaPlace Transform methods to various engineering problems involving ordinary and linear partial differential equations

(Prerequisite: MA 272 Differential Equations)

## MEDICAL OFFICE ASSISTANT

### MO 101 Ethics and Orientation

1 Credit

2 Laboratory Hours

Introduction to medical science. Professional ethics and the responsibility of the physician's assistant to herself, the physician and the patient.

### MO 120 Medical Office Procedures

2 Credits

1 Class Hour, 3 Laboratory Hours

Medical assisting procedures used in the physician's office. Techniques of caring for the office, first aid, professional ethics, jurisprudence, and nomenclature. Open only to Medical Office Assistant students.

## MECHANICAL TECHNOLOGY

### MT 101 Engineering Drawing

1 Credit

3 Laboratory Hours

A basic drafting course specifically designed for Business students.

### MT 102 Engineering Drawing

2 Credits

6 Laboratory Hours

Introductory course in communication by mechanical drawings. Practice in the use of freehand and instruments for orthographic projection, drafting conventions, dimensioning, typical layouts and working drawings of chemical devices and equipment.

### MT 103 Engineering Drawing

2 Credits

6 Laboratory Hours

Basic orientation in engineering drawing, emphasizing line and instrument exercises, lettering, orthographic projection, dimensioning and notes, auxiliary views, sections, threads and fasteners, assemblies and sketching.

### MT 110 Engineering Drawing

1 Credit

3 Laboratory Hours

Basic orientation in engineering drawing, emphasizing line and instrument exercises, lettering, orthographic projection, dimensioning and notes, auxiliary views and sections.

### MT 111 Engineering Drawing and Descriptive Geometry

2 Credits

1 Class Hour, 3 Laboratory Hours

Rules and practice for threads, fasteners, assemblies and sketching. Investigation of principles of descriptive geometry designed to determine true relationship between lines and surfaces, to find intersections, to ascertain clearances, and to decide relationships affecting the design of parts in a machine or structure.

(Prerequisite: MT 110 Engineering Drawing)

**MT 112 Descriptive Geometry** **2 Credits**

**1 Class Hour, 2 Laboratory Hours**

Basic principles of descriptive geometry designed to determine true relationships between lines and surfaces, to find intersections, to locate elements or tangents, to ascertain clearances, or to decide relationships affecting the design of parts in a machine or structure.

**(Prerequisite: Engineering Drawing)**

**MT 129 Shop** **2 Credits**

**1 Class Hour, 3 Laboratory Hours**

Observation and discussion of the machines and materials used in industry to produce machines, appliances, containers. Practice in processing metals, leading to acquaintance with technical and shop terms and a knowledge of what is done in machine shops.

**MT 130 Manufacturing Processes** **3 Credits**

**2 Class Hours, 2 Laboratory Hours**

Basic manufacturing materials and processes such as melting and casting metal, powder metallurgy, plastics, and elementary aspects of metal cutting machine tools. Practice and study of oxyacetylene, arc, and resistance welding.

**MT 131 Manufacturing Processes** **2 Credits**

**1 Class Hour, 3 Laboratory Hours**

Elements of machine tool operation involving the use of the lathe, miller, shaper, drill press and fundamental bench operations. Study of cutting speeds, feeds, coolants, threads, tapers, and tool grinding.

**(Prerequisites: MT 130 Manufacturing Processes, MA 140 College Algebra & Trigonometry and MT 110 Engineering Drawing)**

**MT 132 Manufacturing Processes** **2 Credits**

**1 Class Hour, 3 Laboratory Hours**

Continuation of MT 131 plus operations of the surface grinder and the cylindrical grinder, advanced lathe operations, jig boring, gear cutting, lapping, honing and scraping. Practice and study of turret lathe and automatic screw machine operations.

**(Prerequisite: MT 131 Manufacturing Processes)**

**MT 135 Materials and Processes** **4 Credits**

**3 Class Hours, 3 Laboratory Hours**

Advanced study of the properties and applications of engineering materials and the processes involved in their utilization.

**(Prerequisites: MT 130 Manufacturing Processes, MT 165 Metallurgy and MT 153 Strength of Materials)**

**MT 151 Orientation** **0 Credits**

**1 Class Hour**

A discussion of the task that the student in Engineering Technology must face. Information relative to the technical fields. Study and use of the slide rule.



- MT 152 Statics** **3 Credits**  
**3 Class Hours**
- First course in a two-course elective sequence for Electrical Technology students. Forces and force systems on rigid bodies at rest, the concept of equilibrium, free body concept, centroids and centers of gravity, and moments of inertia.  
(Prerequisite: MA 140 College Algebra and Trigonometry)
- MT 153 Strength of Materials** **3 Credits**  
**3 Class Hours**
- Second course in a two-course elective sequence for Electrical Technology students. Stress and deformation, engineering materials and their properties, welded joints, torsion, shear and moments in beams, stresses in beams, design of beams, deflection in beams, combined stresses, and columns.  
(Prerequisite: MT 152 Statics)
- MT 155 Applied Mechanics (Statics)** **3 Credits**  
**3 Class Hours**
- Principles of statics. Free body diagrams, trusses, force systems in space, friction, centroids, and moments of inertia.  
(Prerequisites: MA 140 College Algebra and Trigonometry and PH 140 Physics)
- MT 156 Applied Mechanics (Dynamics)** **3 Credits**  
**3 Class Hours**
- Principles of dynamics. Velocity, acceleration, mass moments of inertia, kinetics, plane motion, work, power, kinetic and potential energy, impulse, and momentum.  
(Prerequisite: MT 155 Applied Mechanics)
- MT 165 Metallurgy** **4 Credits**  
**3 Class Hours, 3 Laboratory Hours**
- Fundamentals of the physical metallurgy of ferrous and nonferrous alloys, investigation of the physical properties of metals, hardness tests, thermal analysis, and grain structure examination.  
(Prerequisites: PH 141 Physics and CH 104 Chemistry)
- MT 220 Mechanical Design** **3 Credits**  
**2 Class Hours, 3 Laboratory Hours**
- Machine motion and basic mechanisms. Machine motion includes rectilinear and curvilinear displacement, velocity, and acceleration. Basic mechanisms include linkages, cams and gears.  
(Prerequisites: MT 110 Engineering Drawing, MT 156 Applied Mechanics and MT 257 Strength of Materials)
- MT 221 Mechanical Design** **4 Credits**  
**3 Class Hours, 3 Laboratory Hours**
- Principles of mechanical design covering the selection of materials, stress investigation, and the design of fundamental machine elements.  
(Prerequisites: MT 220 Mechanical Design and MT 132 Manufacturing Processes)

- MT 240 Precision Measurement** **2 Credits**  
**1 Class Hour, 3 Laboratory Hours**  
 Theory and practice of precise measurement of the dimensional character of parts and the measurement of physical quantities, such as time, mass, temperature, flow, pressure, speed and others which are utilized for control of physical systems.  
 (Prerequisites: MT 132 Manufacturing Processes and PH 142 Physics)
- MT 254 Strength of Materials** **4 Credits**  
**3 Class Hours, 3 Laboratory Hours**  
 Relationship between stress and strain, the calculation of stresses in machine parts, beams and columns, the use of shear and moment diagrams, the determination of moments of inertia and centers of gravity, the analysis of the effect of loading on stress distribution. Tests on wood, concrete, plastics and metal on standard testing machines in accordance with ASTM testing procedures.  
 (Prerequisites: PH 192 Statics and MA 171 Calculus)
- MT 257 Strength of Materials** **4 Credits**  
**3 Class Hours, 3 Laboratory Hours**  
 Stress and strain, elasticity, torsion, welded joints, riveted joints, beam stresses, centroids, moments of inertia, shear and moment diagrams. Laboratory work includes strain gauges, tests on wood, metals and plastics conducted in accordance with ASTM and AASHTO standards.  
 (Prerequisites: MT 155 Mechanics and MA 141 Analytic Geometry and Calculus)
- MT 260 Thermodynamics** **4 Credits**  
**3 Class Hours, 3 Laboratory Hours**  
 Interchange of energy between mechanical and thermal form. Energy relationships are developed from the perfect gas laws and the general energy equation. These relationships are employed to study practical heat cycles such as air compression, the internal combustion engine, steam generation, pumps, and refrigeration.  
 (Prerequisites: MT 156 Applied Mechanics, PH 141 Physics, MA 142 Analytic Geometry and Calculus and MT 261 Fluid Mechanics)
- MT 261 Fluid Mechanics** **3 Credits**  
**3 Class Hours**  
 Behavior of compressible and non-compressible fluids under static and dynamic conditions, including principles of hydrostatics, pressure measurements, flow, flow measurement, viscosity, hydrodynamic power and force.  
 (Prerequisites: PH 141 Physics, MA 142 Analytic Geometry and Calculus and MT 155 Applied Mechanics)
- MT 262 Mechanical Equipment** **4 Credits**  
**3 Class Hours, 3 Laboratory Hours**  
 Thermodynamic properties and the utility of mechanical equipment, such as fuel burners, internal combustion engines, pumps, fans, refrigeration and air conditioning units, gas turbines, and hydraulic turbines.  
 (Prerequisite: MT 260 Thermodynamics)

## MT 267 Statistical Quality Control

4 Credits

3 Class Hours, 2 Laboratory Hours

Probability and statistics as they relate to sampling theory and the control of quality in the manufactured product. Standard deviation, areas under and ordinates of the normal curve, the poisson, control charts, single, double and sequential sampling plans, machine capability, product reliability and statistical dimensioning.

(Prerequisites: MT 240 Precision Measurement and MA 142 Analytic Geometry & Calculus)

## MT 290 Organization and Management

3 Credits

3 Class Hours

Principles, functions and coordination of industrial organization, such as management, costs, product development, marketing, methods analysis, work measurement, plant layout, material handling, production and inventory control.

## MT 291 Organization and Management

3 Credits

3 Class Hours

Continuation of MT 290 with a more intensive treatment of such areas as plant layout, material handling, production and inventory control.

(Prerequisite: MT 290 Organization and Management)

# PHYSICAL EDUCATION

## PE 101, 102, 103 Physical Education PE 204, 205, 206

1 Credit

2 Laboratory Hours

Basic instruction and activity in a variety of carry-over sports, such as archery, badminton, bowling, golf, horseshoes, tennis, weight training. Participation in and rudimentary instruction in football, soccer, basketball, volleyball, softball, tumbling, wrestling, physical conditioning, and first aid.

Note: Students enrolled in Physical Education must wear a regulation gym uniform, which can be purchased at the College Book Store.

## PE 109 Standard First Aid Course

1 Credit

1 Class Hour

Fundamentals of first aid as outlined by the standard Red Cross course. For Dental Hygiene students, additional specialized seminars may be conducted.

# PHYSICS

## PH 100 Physical Science

3 Credits

2 Class Hours, 2 Laboratory Hours

An introduction to physics and chemistry. Motion, force, gravitation, atomic theory, the periodic table, energy and momentum, kinetic theory, electricity and magnetism, the nature of light.



**PH 101 Physical Science 3 Credits**

**2 Class Hours, 2 Laboratory Hours**

An introduction to physics and chemistry for students with a more adequate preparation than required for PH 100 Physical Science. Students who have one unit of either high school physics or chemistry, and trigonometry or intermediate algebra or mathematics will be expected to enroll in this course.

Motion, force, gravitation, atomic theory, the periodic table, energy and momentum, kinetic theory, electricity and magnetism, the nature of light.

**PH 106 Physics 3 Credits**

**2 Class Hours, 2 Laboratory Hours**

Heat: Temperature, heat quantities and transfer.

Mechanics: Velocity and acceleration, force and motion, friction, work and energy, power, concurrent and nonconcurrent forces, projectile motion, momentum, centripetal forces, simple harmonic motion.

**PH 107 Physics 3 Credits**

**2 Class Hours, 2 Laboratory Hours**

Electricity: Ohm's Law, circuits, instruments, power, electrochemistry, induction, alternating current.

Light: Reflection, refraction, lenses, optical instruments, color, atomic and nuclear physics.

**(Prerequisite: PH 106 Physics)**

**PH 110 Physics (Radiation) 3 Credits**

**2 Class Hours, 2 Laboratory Hours**

A one-semester course for X-ray Technology students which will include atomic structure, nuclear structure, theory and operation of radiation detecting instruments, radioactive decay, standardization and calibration techniques, activation analysis.

**(Prerequisites: MA 101 Mathematics, PH 107 Physics, and CH 102 Chemistry)**

**PH 140 Physics (Mechanics) 4 Credits**

**3 Class Hours, 2 Laboratory Hours**

Composition and resolution of vectors, equilibrium, moment of a force, rectilinear motion, gravitation, motion in a plane, work and energy, impulse and momentum, rotation, hydrostatics, Bernoulli's equation.

**PH 141 Physics (Heat, Light and Sound) 4 Credits**

**3 Class Hours, 2 Laboratory Hours**

Heat: Temperature, expansion, quantity of heat, transfer of heat, first and second laws of thermodynamics, thermal properties of solids, liquids, and gases.

Light: Nature and propagation of light, reflection and refraction, lenses, illumination, color, interference and diffraction, polarization.

Sound: Wave motion, vibrating bodies, stationary waves, resonance, harmonics, interference.

**(Prerequisite: PH 140 Physics)**

**PH 142 Physics (Electricity and Magnetism) 4 Credits**

**3 Class Hours, 2 Laboratory Hours**

Coulomb's Law, atomic structure, Rutherford scattering, the electric field, Gauss' Law, potential gradient, capacitance and dielectrics, current and resistance. Ohm's Law, Joule's Law, DC circuits, Kirchhoff's Laws, electrochemistry and thermoelectricity, the

magnetic field and current. Faraday's and Long's Laws, induced emf, magnetic properties of matter, inductance AC circuits and em waves.

**(Prerequisite: MA 140 College Algebra and Trigonometry)**

**PH 170 Physics (Mechanics) 4 Credits**  
**3 Class Hours, 3 Laboratory Hours**

Statics and dynamics: motion in one dimension, motion in a plane, Newton's laws, friction, rotation, work and energy, impulse and momentum, statics of rigid bodies. Students in this course should also be enrolled in MA 170 Analytic Geometry and Calculus.

**PH 171 Physics (Mechanics and Heat) 4 Credits**  
**3 Class Hours, 3 Laboratory Hours**

Oscillations, gravitation, fluid statics and dynamics, waves in elastic media. Temperature, calorimetry, heat transfer, fusion, vaporization, elementary thermodynamics and kinetic theory.

**(Prerequisites: PH 170 Physics and MA 170 Analytic Geometry & Calculus)**

**PH 172 Physics (Electricity and Magnetism) 4 Credits**  
**3 Class Hours, 3 Laboratory Hours**

Fundamental laws of electric and magnetic fields with application to elementary circuit problems. Electrostatic fields, induced emfs, inductance, capacitance, dielectrics, steady currents, and simple transients. Laboratory work consists of electrostatic, electromagnetic and circuit measurements

**(Prerequisites: PH 171 Physics and MA 171 Analytic Geometry & Calculus)**

**PH 192 Statics 4 Credits**  
**4 Class Hours**

Forces, moments, and couples in static force systems, taught through the use of vectors.

**(Prerequisites: PH 171 Physics and MA 171 Analytic Geometry and Calculus)**

**PH 270 Physics (Light and Sound) 4 Credits**  
**3 Class Hours, 3 Laboratory Hours**

Wave motion, sound and acoustical phenomena. Geometrical optics, optical parts and instrumentation. Physical optics, nature of light, interferometry, polarization of light.

**(Prerequisites: PH 172 Physics and MA 172 Analytic Geometry & Calculus)**

**PH 271 Physics (Atomic) 4 Credits**  
**3 Class Hours, 3 Laboratory Hours**

Concepts of atomic physics, special theory of relativity, the quantized nature of matter and energy, models of the atom, elementary quantum mechanics. The quantized atom, Pauli exclusion principle, Zeeman effect, elementary molecular physics.

**(Prerequisites: PH 172 Physics and MA 270 Analytic Geometry & Calculus)**

**PH 272 Physics (Nuclear) 4 Credits**  
**3 Class Hours, 3 Laboratory Hours**

Fundamentals of nuclear and neutron physics, radioactivity, nuclear power and fission. Laboratory work includes the theory and operation of radiation detecting instruments, such as Geiger-Mueller counters, proportional counters, scintillation counters, and ionization chambers.

**(Prerequisite: PH 271 Physics or equivalent)**

**PH 280 Astronomy**

**4 Credits**

**3 Class Hours, 3 Laboratory Hours**

Fundamentals of astronomy including the earth's motion, earth satellites, the planets and the solar system, stellar structure and the sidereal universe. The laboratory will stress some practical aspects of astronomy, the use of the telescope and observing techniques.

**(Prerequisite: MA 142 Analytic Geometry and Calculus)**

**PH 290 Dynamics**

**4 Credits**

**4 Class Hours**

Kinetic particles and systems, and the general methods of analysis of such systems, taught through the use of vectors.

**(Prerequisite: PH 192 Statics)**

**PRE-TECHNICAL**

**PT 101 Physical Science**

**0 Credits**

**6 Class Hours**

Introductory course of a three-term sequence. The concepts of dynamics and statics. Motion, forces, impulse and momentum, work and energy.

**PT 102 Physical Science**

**0 Credits**

**6 Class Hours**

Heat and the extension of the principle of conservation of energy, covering approximately one-half term, whereupon the course is divided into a three-hour course on theories of fields in electricity and magnetism, and a three-hour course on the structure of matter and an introduction to chemistry.

**(Prerequisite: PT 101 Physical Science)**

**PT 103 Physical Science**

**0 Credits**

**3 Class Hours**

Further elaborations of fields and their applications, introductory quantum physics of light and matter, atomic structure, and the nucleus.

**(Prerequisite: PT 102 Physical Science)**

**PT 110, 111, 112 Elements of Technical Mathematics**

**0 Credits**

**4, 4, 4 Class Hours, 4, 4, 4 Laboratory Hours**

A three-quarter sequence of integrated mathematics involving a mature treatment of algebra, geometry, and trigonometry. Special attention to technical computations and problems using the slide rule, logarithms, scientific notation and dimensional analysis. Continuous correlation of the work in mathematics with the work in physics and chemistry.

**PT 120 Technical Calculations**

**0 Credits**

**4 Class Hours**

Technical problem solving, applying principles and concepts of the student's concurrent courses in mathematics and PT 101 Physical Science.

**PT 121 Technical Calculations**

**0 Credits**

**4 Class Hours**

Concurrent with PT 102 Physical Science. Problems involving heat and energy. At approximately mid-term the course is divided into two two-hour sessions emphasizing problems in chemistry and electricity, respectively.

**(Prerequisite: PT 120 Physical Science)**



**PT 122 Technical Calculations**

**0 Credits**

**2 Class Hours**

Concurrent with PT 103 Physical Science. Problems involving theories of fields, elementary quantum theory, theories of atomic structure and the nucleus.

**(Prerequisite: PT 121 Physical Science)**

**PT 130 Engineering Drawing**

**1 Credit**

**3 Laboratory Hours**

Fundamentals of Engineering Drawing: simple multiview drawing and sketching, with stress on accuracy and neatness in lettering and linework.

**PT 131 Engineering Drawing**

**1 Credit**

**3 Laboratory Hours**

Orthographic projection, auxiliary views, sectional views, pictorial drawing, free hand drafting with continued emphasis on accuracy and neatness.

**(Prerequisite: PT 130 Engineering Drawing)**

**PT 132 Engineering Drawing**

**1 Credit**

**3 Laboratory Hours**

Developments and intersections, threads and fastenings, welding drawings, working drawings, exploded views. Continued emphasis on accuracy and neatness.

**(Prerequisite: PT 131 Engineering Drawing)**

**PT 140 Chemistry**

**0 Credits**

**3 Class Hours, 2 Laboratory Hours**

Rudiments of electrochemistry, thermochemistry, solutions, atomic structure and bonding, descriptive coverage of the more common elements and families.

**(Prerequisite: PT 102 Physical Science)**

**PT 150, 151, 152 English**

**0 Credits**

**3 Class Hours**

A three-term sequence of courses designed to improve the student's mastery of language. Concentration on grammar, spelling, punctuation, and the organization of ideas for effective expository writing. Development of reading skills: speed, comprehension, vocabulary building.

## **ALUMNI**

Graduates who are working in the area are urged to take advanced courses offered in the Evening Extension Division.

### **Transcripts**

Each graduate is entitled to two transcripts of his work completed at the College. One dollar is charged for each additional transcript.

### **Alumni Association**

All graduates of the College now automatically become paid-up lifetime members of the Broome Tech Alumni Association, which is legally a division of the Faculty-Student Association so that it too is organized on a non-profit corporate basis.

The association has its own officers, board of directors and paid executive secretary, and its primary purpose is to provide a link between the college and its graduates. A bi-monthly printed Alumni Newsletter helps to accomplish this objective by providing alumni with news of the college as well as information about other graduates.

The Alumni Association actively supports the College's scholarship program and conducts programs for its members throughout the year, such as the annual Alumni Dinner-Dance.

## **THE LIBRARY**

In seeking to fulfill its aims of furthering the objectives of the College, Broome Tech's library has developed the most complete collection of technical works in the Southern Tier. More than half of its 17,000 books, pamphlets and government documents are in the scientific and engineering fields, covering both basic and advanced phases.

In addition, the library receives more than 350 periodicals, most of which are available in permanent form. It also combines facilities for research and leisure reading for both students and faculty.

Part of the library's purpose is to stimulate intellectual curiosity and to provide the means for independent research. Consequently, three librarians are on hand to instruct students in the profitable use of the library's resources.

Located in the southwest wing of the Administration Building, the library and its facilities are available to the public and to evening division students, too. The hours during the school year are:

Monday through Thursday—8 a.m. to 9 p.m.

Friday—8 a.m. to 4:30 p.m.

## **NUCLEAR PHYSICS LABORATORY**

One of the most modern facilities at Broome Tech is the Nuclear Physics Laboratory, which is an example of the College's constant effort to provide the most up to date education available. The laboratory is used to introduce seniors in the Engineering Science curriculum to the nuclear physics field, and Chemical Technology seniors use it in their Advanced Quantitative Analysis course. They learn the most modern methods being employed in industry and science, as there are now many industrial uses for radioactive materials.

A \$12,000 grant from the Atomic Energy Commission in 1963 provided the funds to equip the laboratory.

## **COMPUTER CENTER**

An IBM 1620 digital computer is another modern instrument Broome Tech teaches its students to use. Many colleges have built their engineering and business courses around the computer, and many industries depend on its rapid calculations. Consequently, both transfer-minded students and those preparing for immediate employment after graduation are being introduced to the world of the computer. All students in technical programs and in the business curriculums receive instruction in using the 1620.

## **STUDENT CENTER**

The busiest and most versatile building on the Broome Tech campus is the Student Center. It houses the gymnasium, the College Cafeteria, Student Lounge, Faculty Dining Room, the Little Theater and the College Book Store. Therefore, this building is used by students of all curriculums and is frequently in use evenings, as well as during the day.

## **FACULTY-STUDENT ASSOCIATION**

The Faculty-Student Association is a non-profit organization, incorporated under New York State law. It is operated by faculty officers with a student advisory board. One of the functions of the association is running the College Book Store.

## CO-CURRICULAR ACTIVITIES

The College recognizes the fact that student experiences outside the classroom are important in one's over-all development. For this reason the College supports an active co-curricular program as a complement to the academic program. The variety of activities on the campus reflects the diversification of student interests and provides the opportunity for students to develop talents, leadership ability and a sense of social responsibility.

Co-curricular activities are guided by two faculty-student committees — the Student Activity Committee for non-athletic activities and the Athletic Board of Control for sports.

The Student Activity Committee consists of four faculty members and the president of the Student Council. It approves, recommends and supervises the policy of all student activities, except athletics.

The Athletic Board of Control is composed of three faculty members, the director of athletics and one student. It develops and recommends policy for intercollegiate and intramural athletic programs.

### Student Council

The Student Council, the governing body in student affairs, is the heart of the co-curricular activity program. The officers, elected from the student body, and the representatives from the various curriculums promote and coordinate the student activities. The Social Committee is one of the most important Student Council committees, as it is responsible for the extensive social program of the Council.

### Music

The Student Council sponsors four performing vocal groups—the College Choir and the Madrigal Singers, which are open to both men and women students, the Tech Tone Masters which is a male glee club, and a women's glee club.

The highlight of the choir's program last year was its performance at the opening of the New York State Pavilion at the World's Fair.

The College musical organizations also have joined in the past with the Civic Theater of Binghamton for the cooperative production of Broadway musicals. In addition, an oratorio chorus of faculty, students and members of the community has performed the Handel oratorio, "The Messiah."





## Honor Societies

### PHI THETA KAPPA

In 1962 the Mu Eta chapter of Phi Theta Kappa was established at the College. Phi Theta Kappa is a national honor society at junior colleges, similar in purpose to Phi Beta Kappa at the four-year colleges and universities. Mu Eta chapter is open to freshmen and seniors who have achieved outstanding academic grades, been especially active in co-curricular participation, demonstrated outstanding qualities of leadership and responsibility, and made noteworthy contributions to the College.

### SIGMA PHI ALPHA

The national Dental Hygiene honor society, Sigma Phi Alpha, has a chapter at Broome Tech, the Upsilon chapter. Those senior dental hygiene students who rank highest in scholarship and character and who exhibit potential qualities for future growth and attainment are selected for membership.

## Publications

*Tech Talk* is the campus newspaper and the *Citadel* is the College yearbook. *Tech Talk* is published semi-monthly and the *Citadel* is, of course, published just once a year. Positions on both publications are open to all students.

*Tech Talk's* purpose is to report news of the campus, student body and faculty. It also provides a place for students to express their ideas about campus activities and about events related to college life.

The *Citadel* provides a record, mostly pictorial, of the school year, and as such the objectives of its staff are to be historical as well as amusing.

## Professional Society Affiliates

Since exposure to organizations in their fields of study is considered of benefit to students, many curriculums have their own affiliates of national professional societies. Among these are:

ASTME, the American Society of Tool and Manufacturing Engineers, for Mechanical Technology students.

Business Club, which is affiliated with the Administrative Management Society, formerly known as NOMA (National Office Management Association).

Dental Hygiene Association, an affiliate of the American Dental Hygiene Association.

Girls Friday Chapter of the National Secretaries Association (International) Binghamton Chapter.

IEEE, the Institute of Electrical and Electronics Engineers, for Electrical Technology students.

In addition, some meetings of local professional societies are attended by students, as the American Chemical Society invites Chemical Technology students to its meetings. Some professional societies hold meetings on campus, too, and students are always welcome to attend. Thus students have the opportunity to become acquainted with professional people in their fields of study and to attend lectures, and see films and demonstrations of new developments.

## Other Clubs

In addition to the co-curricular activities already listed, other organizations are active on campus, such as the Camera Club, the Circle K, Circlettes, Newman Club, Student Christian Association, Drama Club, Young Republicans Club. All are open to all students in good standing. Details on the purposes and requirements for membership in all clubs are available in the Student Handbook.



## ATHLETICS

### Varsity Sports

Broome Tech fields varsity teams in seven sports — basketball, soccer, baseball, cross-country, golf, tennis and wrestling — and has acquired an excellent reputation for team play and sportsmanship.

The basketball team has captured the regional junior college championship four of the last five years and has won 361 games and lost 97. The baseball team has won the regional tournament two of the last three times it was played, and the cross-country, golf and soccer squads have also been regional powers in the past.

### Intramural Sports

All students may participate in intramural sports. Men's teams representing the various curriculums compete for the coveted President's Trophy, awarded annually to the one acquiring the most points in a variety of activities. League competition is conducted in flag football, basketball, volleyball, soccer and softball, while students also compete in individual sports such as golf, badminton, archery, tennis, cross-country and bowling.

Archery, skiing and co-educational bowling clubs offer additional opportunity for participation in recreational activities, although they do not count in President's Trophy competition.

## Women's Sports

The College also has a varied sports program for women students. In addition to the Physical Education classes, there are intramural competition and All-Sports Days.

Intramurals are contested in volleyball, badminton, tennis, archery, basketball, softball, bowling and Hurricane 9 (a modified form of touch football for girls). A Dean's Trophy is awarded to the winning team, similar to the President's Trophy for the men's intramurals champion.

The All-Sports Days consist of competition in varied sports against women's teams from other colleges, both at home and away.

## Cheerleaders

A squad of cheerleaders performs at all home basketball and soccer games. This year the same unit will lead the cheering for both sports, in contrast to last year's two-unit system. Positions are open to both men and women students whether they are freshmen or seniors, and tryouts will be held shortly after the start of the school year in September.

In addition, the College has a Hornet mascot costume, which will be worn by a student during games.

## CONVOCATIONS

Speakers in a diversity of fields are brought to the campus during the school year as part of the College's convocation program. These convocations are considered a phase of the academic curriculum, although they are scheduled apart from the regular classroom program.

Television writer Rod Serling (pictured below during his talk at Broome Tech), former Congressman Walter Judd, and author Vance Packard are among those who have appeared in the last two years.





## HONOR AWARDS

- American Chemical Society (Binghamton Section) Award** of \$50 to the outstanding senior in chemistry.
- American Material Handling Society (Southern Tier Chapter) Award** of \$50 to a Mechanical Technology senior who has demonstrated an interest in material handling and plans to make a career of this field.
- American Society for Testing and Materials Engineers (Binghamton Chapter) Award** of a one-year membership in the society to two Mechanical Technology seniors who have shown superior scholastic ability and have demonstrated an interest in engineering materials and their evaluation.
- American Society of Tool and Manufacturing Engineers (ASTME) Award** of the Tool Engineers Handbook to a senior in the student ASTME Chapter who has contributed outstanding service.
- Binghamton Chamber of Commerce Award** of an engraved certificate to two seniors (a man and a woman) for leadership in co-curricular activities and outstanding academic achievement.
- Broome County Medical Assistants' Association Award** of a Dorland Illustrated Medical Dictionary to a senior Medical Office Assistant who through scholarship and aptitude has shown proficiency in those subjects related to the management of a physician's office.
- Broome County Medical Society Award** of \$200 to a freshman student in the Medical Office Assistant program selected by the faculty for aptitude, initiative and scholarship.
- Business Club Awards** of three inscribed pewter bowls to the outstanding student, academically, in each of the three options of the Business Department—accounting, marketing and secretarial.
- Colonial TV Award** of a \$25 gift certificate to an Electrical Technology senior who has shown outstanding ability in laboratory work.
- U. S. Green Mathematics Award** of \$50 to a senior for showing a high degree of ability and progress in mathematics.
- Industrial Bank of Binghamton Award** of \$100 defense bond to a Liberal Arts senior who has written the best essay in a contest conducted by the Liberal Arts department.
- Institute of Electrical and Electronics Engineers (IEEE) Awards:**
- 1—An IEEE certificate from the national IEEE office to an Electrical Technology senior who has contributed most to the student IEEE chapter.
  - 2—\$50 from the Binghamton Section of IEEE to the Electrical Technology senior who has shown leadership and outstanding ability in the IEEE organization. The student must be in the top quarter of his graduating class.
- Ladies Auxiliary of the Broome County Area Chapter of the New York State Society of Professional Engineers Award** of \$50 to an Engineering Science senior who has shown a high degree of engineering ability. Financial need may be a factor in selecting this recipient.
- Sales and Marketing Executive Club of the Southern Tier Award** of \$200, to be given to one person or \$100 each to two freshman students in the marketing program on the basis of need and academic performance.
- Stevenson Medal**, given by the New York State Dental Society, to the Dental Hygiene student who possesses in the highest degree the various qualities that go to make success in this work. Theory, technique and personality are the three principal considerations.
- Upsilon Chapter of Sigma Phi Alpha (National Dental Hygiene Honor Society) Award** of membership in the chapter. Limited to the top 10 percent of the Dental Hygiene graduates who rank highest in scholarship and character and who exhibit potential qualities for future growth and attainment.

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# STATE UNIVERSITY OF NEW YORK

Broome Technical Community College is one of the 58 colleges that comprise the State University of New York (SUNY), which was established by the State Legislature in 1948. At the undergraduate level, there are 18 four-year colleges which are wholly operated by the state, 28 two-year colleges which are co-sponsored by the state and the counties in which they are located, and six two-year colleges which are entirely state operated. In addition, SUNY conducts six colleges within private universities in the state, three university centers that offer both graduate and undergraduate programs, a graduate school of public affairs and two medical centers. And 24 of the four-year colleges have graduate programs.

Although the units of the State University are separated geographically, all are united in their purpose—to improve and extend opportunities for youth to continue their education after high school. The geographic separation, moreover, enables students to enjoy the advantages of attending relatively small colleges, even though State University is one of the largest state universities in the country.

State University is guided by its motto: "Let Each Become All He Is Capable of Being."

It offers a wide variety of courses in its 58 undergraduate units. These courses include two-year programs in such technical curricula as chemistry, electrical and mechanical technology, as well as technical courses in industrial, agricultural and health service areas.

State University is governed by a Board of Trustees, which is appointed by the Governor. Its function is to plan the total development of State-supported higher education. But each of its colleges is locally administered. Students, therefore, should write directly to the college in which they are interested for admission forms and information.

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CHARLES GARSIDE

New York City

MORRIS IUSHEWITZ

Secretary of New York City  
Central Labor Council

LESTER B. GRANGER

New York City

SAMUEL HAUSMAN

Chairman of the Board of Belding,  
Hausman Fabrics,  
New York City

EDWIN F. JAECKLE

Attorney in Buffalo

CLIFTON W. PHALEN

President of New York Telephone Co.,  
New York City

JOHN A. ROOSEVELT

Bache & Co.,

New York City

JAMES J. WARREN

Albany, N.Y.

DON J. WICKHAM

Commissioner of State Department  
of Agriculture and Markets,  
Albany, N. Y.

## Central Administrative Staff

President of the University

Samuel B. Gould, B.A., M.A., LL.D.,  
effective September 1, 1964

Provost

Harry W. Porter, Ph.D.

Executive Dean for Institutes  
and Community Colleges

Paul B. Orvis, B.S.

Associate Executive Dean for  
Institutes and Community Colleges

Kenneth T. Doran, Ed.D.



# STATE UNIVERSITY OF NEW YORK

## Central Administrative Office: Albany 1, N. Y.

### UNIVERSITY CENTERS

State University at Albany  
State University at Buffalo  
State University at Stony Brook

### MEDICAL CENTERS

Downstate Medical Center at Brooklyn (New York City)  
Upstate Medical Center at Syracuse

### GRADUATE SCHOOL

Graduate School of Public Affairs at Albany

### COLLEGES

College at Brockport	College at New Paltz
College at Buffalo	College at Oneonta
College at Cortland	College at Oswego
College at Fredonia	College at Plattsburgh
College at Geneseo	College at Potsdam
Harpur College at Binghamton	
College of Forestry at Syracuse University	
Maritime College at Fort Schuyler (Bronx)	
College of Ceramics at Alfred University	
College of Agriculture at Cornell University	
College of Home Economics at Cornell University	
School of Industrial and Labor Relations at Cornell University	
Veterinary College at Cornell University	

### TWO-YEAR COLLEGES

Agricultural and Technical Institutes at:	Alfred	Delhi
	Canton	Farmingdale
	Cobleskill	Morrisville

### COMMUNITY COLLEGES

(Locally-sponsored two-year colleges under the program of State University)

Adirondack Community College at Hudson Falls  
Auburn Community College at Auburn  
Borough of Manhattan Community College at New York City  
Bronx Community College at New York City  
BROOME TECHNICAL COMMUNITY COLLEGE AT BINGHAMTON  
Corning Community College at Corning  
Dutchess Community College at Poughkeepsie  
Erie County Technical Institute at Buffalo  
Fashion Institute of Technology at New York City  
Fulton-Montgomery Community College at Johnstown  
Hudson Valley Community College at Troy  
Jamestown Community College at Jamestown  
Jefferson Community College at Watertown  
Kingsborough Community College at Brooklyn  
Mohawk Valley Community College at Utica  
Monroe Community College at Rochester  
Nassau Community College at Garden City  
New York City Community College of Applied Arts and Sciences at Brooklyn  
Niagara County Community College at Niagara Falls  
Onondaga Community College at Syracuse  
Orange County Community College at Middletown  
Queensborough Community College at New York City  
Rockland Community College at Suffern  
Staten Island Community College at New York City  
Suffolk County Community College at Selden  
Sullivan County Community College at South Fallsburg  
Ulster County Community College at Kingston  
Westchester Community College at Valhalla





## MAP OF THE CAMPUS

1. **TITCHENER HALL**  
Engineering Science  
Liberal Arts  
Audio-Visual Center  
Nuclear Physics Laboratory
2. **ADMINISTRATION BUILDING**  
Administrative Offices  
Library  
Computer Center  
Business Department
3. **SCIENCE BUILDING**  
Chemical Technology  
Dental Hygiene  
Medical Office Assistant
4. **ELECTRICAL BUILDING**  
Electrical Technology
5. **STUDENT CENTER**  
Book Store  
Cafeteria  
Gymnasium  
Little Theater  
Student Lounge
6. **MAINTENANCE BUILDING**
7. **MECHANICAL BUILDING**  
Civil Technology  
Mechanical Technology

